

Subsaharan Ceratopogonidae (Diptera) IX. New species and records from southern Africa

by

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SYNOPSIS

Study of a collection of Ceratopogonidae made on trips in South Africa by the senior author and colleagues in 1980 yielded records of 27 species, exclusive of *Culicoides*, of which 17 species in 12 genera are described as new: *Atrichopogon helles*, *Forcipomyia vesicula*, *Dasyhelea cellulana*, *Alluaudomyia anserina*, *A. falcata*, *A. lunata*, *A. soutini*, *Kolenohoelea luciae*, *Monohoelea makonde*, *Stilobezzia trilineata*, *Jenkinshelea distincta*, *Johannsenomyia angulosa*, *Mallochohelea aukurabis*, *M. hansfordi*, *Bezzia insolita*, *B. turrita*, and *Phaenobezzia beni*. Some additional material is reported from elsewhere in Subsaharan Africa. Keys are presented for identification of species in the genera *Alluaudomyia*, *Leptoconops*, and *Monohoelea*.

INTRODUCTION

In the present study we report mainly on collections made by the senior author and colleagues during several trips in South Africa in 1980. While serving temporarily with the National Institute for Tropical Diseases, Tzaneen, in the north-east Transvaal, they were able to visit three interesting and unusual areas, among others, Augrabies Falls, Sudwala Caves, and Soutini Salt Spring. The present report deals with only about half the material collected. Some additional material is reported from elsewhere in Subsaharan Africa. As noted in previous reports, the present series of collections strongly indicates how incompletely the ceratopogonid fauna of southern Africa has been sampled. We give here new records of 27 species, of which 17 species in 12 genera were previously undescribed.

The Augrabies Falls on the Orange River is situated in the north-western arid region of the Cape Province where the annual mean rainfall is about 25 cm. The area, geologically, is very old, dating back to the Archaean. In 1966 the Falls and surrounding area were declared a National Park. Water suitable for midge breeding is naturally restricted; nevertheless, a rich fauna is obviously present. Apart from the new species, an interesting find was *Dasyhelea ismailiae* Macfie, formerly known only from Egypt, and *Forcipomyia murina* (Winnertz), previously thought to be a Holarctic species.

The Sudwala Caves, situated in the eastern Transvaal, are typical limestone caverns formed in the great Eastern Escarpment. The collectors hoped to find a cavernicolous fauna here, as was described by Vattier & Adam (1966) in Gabon and the Republic of the Congo. Unfortunately time was too short for adequate exploration, and only a few *Forcipomyia* were collected in the cave itself. Several species of great interest were, however, taken in the open.

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Soutini is the site of a naturally occurring salt-water spring with attendant swamp in the low-lying parts of the Gazankulu Homeland. The immediate area is uninhabited, but people do come from some distance to gather salt, which they extract from the soil. The area is apparently destined to be exploited to attract tourists. When and if this happens, the swamp will be drained and the fauna lost. Unfortunately it has not been possible until now to determine the breeding sites of the species collected. Members of the staff of the National Institute at Tzaneen, however, have found considerable salt-water breeding by mosquitoes, so aquatic life is sustained and midge immatures will undoubtedly be found if searched for.

We are most grateful to Dr Frank Hansford, Director of the National Institute for Tropical Diseases, Tzaneen, for continued interest and co-operation, and to Drs J. G. H. Londt and Brian Stuckenberg of the Natal Museum in Pietermaritzburg for their assistance in publishing these reports. The holotypes of our new species are deposited in the South African Institute for Medical Research, Johannesburg (SAIMR). Paratypes as available will be deposited in the British Museum (Natural History), London (BMNH), the Natal Museum (NM), and the National Museum of Natural History in Washington, D.C. (USNM).

The systematic arrangement used here follows that given in the Afrotropical Catalogue by Wirth, De Meillon & Haeselbarth (1980). Keys to the genera may be found in Wirth *et al.* (1974, 1977). Explanation of the taxonomic characters used can be found in the general papers on Ceratopogonidae by Wirth (1952a), Wirth *et al.* (1977), and De Meillon and Wirth (1981b). We are grateful to Ms Molly Ryan for assistance with the illustrations, especially for preparing the drawings of wings.

Subfamily Leptoconopinae

Genus *Leptoconops* Skuse

Key to females of the Subsaharan species of *Leptoconops* (adapted from De Meillon & Hardy, 1953)

- 1 Antenna 13-segmented (subgenus *Holoconops*) 2
- Antenna 14-segmented (subgenus *Leptoconops*) 3
- 2 Third palpal segment inflated **kerteszi** Kieffer
- Third palpal segment not inflated **interruptus** (Enderlein)
- 3 Fifth tarsomere as long or longer than third and fourth together **nicolayi** de Meillon
- Fifth tarsomere only slightly longer than fourth 4
- 4 Costa ending proximad of level of mediocubital fork **rhodesiensis** Carter
- Costa ending at level of mediocubital fork 5
- 5 Thorax and abdomen dull dark sepia-brown; (spermathecae smaller, $0,044 \times 0,028$ mm) **harrisoni** de Meillon & Hardy
- Thorax and abdomen shining 6
- 6 Thorax purplish, genital lamellae and halter pale; terminal segment of antenna as long as three preceding segments; spermathecae smaller, $0,044 \times 0,020$ mm **dixi** de Meillon

- Thorax black, lamellae and halter black; terminal antennal segment as long as two preceding segments together; spermathecae larger, $0,065 \times 0,042$ mm
capensis de Meillon & Hardy
- 5 Fifth tarsomere as long or longer than third and fourth together
nicolayi de Meillon
- Fifth tarsomere only slightly longer than fourth 6
- 6 Costa ending proximad of level of mediocubital fork **rhodesiensis** Carter
- Costa ending at level of mediocubital fork 7
- 7 Thorax and abdomen dull dark sepia-brown; spermathecae smaller, $0,044 \times 0,028$ mm **harrisoni** de Meillon & Hardy
- Thorax and abdomen shining 8
- 8 Thorax purplish, genital lamellae and halter pale; terminal segment of antenna as long as three preceding segments; spermathecae smaller, $0,044 \times 0,020$ mm
dixi de Meillon
- Thorax black, lamellae and halter black; terminal antennal segment as long as two preceding segments together; spermathecae larger, $0,065 \times 0,042$ mm
capensis de Meillon & Hardy

Leptoconops (Leptoconops) capensis de Meillon & Hardy

Leptoconops (Leptoconops) capensis de Meillon & Hardy, 1953: 24 (♀; South Africa; fig. spermatheca); de Meillon, 1959b: 8 (♂; Cape Prov.; fig. process 9th tergum); Wirth, 1964: 1 (♂ recorded Cape Town).

New Records. SOUTH AFRICA: *Cape Province*, 2 ♂, Cape Paterson, 300 m, 15.iii.1972, M. E. & B. J. Irwin, sand dunes (NM, USNM); 1 ♂ 1 ♀, Ysterfontein, Atlantic Coast, Southwest Cape, 20.x.1964, B. & P. Stuckenberg (NM, USNM). *Natal*, 1 ♀, Saint Lucia, 21.x.1980, N. du Toit, UVL trap (USNM).

Leptoconops (Leptoconops) harrisoni de Meillon & Hardy

Leptoconops (Leptoconops) harrisoni de Meillon & Hardy, 1953: 22 (♂, ♀; Cape Prov.; figs); de Meillon, 1959b: 8 (compared *capensis* ♂; fig. process 9th tergum).

New Records. SOUTH AFRICA: *Cape Province*, 2 ♀, Brandkop Area, Calvinia Dist., Southwest Cape, 14.x.1964, B. & P. Stuckenberg, (NM, USNM).

Subfamily Forcipomyiinae

Genus *Atrichopogon* Kieffer

Atrichopogon aegyptius Kieffer

Atrichopogon aegyptius Kieffer, 1925: 250 (♂, ♀; Egypt; fig. ♂ genitalia); Macfie, 1947: 73 (Sudan; in key; syn.: *phrixus* de Meillon).

Atrichopogon phrixus de Meillon, 1943: 105 (♂; Transvaal; fig. wing, genitalia); Wirth, *et al.* 1980: 153 (catalogue reference; distribution).

Note. Unfortunately we overlooked Macfie's synonymy of *phrixus* when we prepared the Afrotropical Catalogue (Wirth *et al.* 1980). Kieffer's figure of the very distinctive male genitalia leaves little doubt of the correctness of the synonymy. The whereabouts of Kieffer's type of *aegyptius* is unknown; Kieffer did not ordinarily preserve his types. Steyskal & El-Bialy (1968) stated that no ceratopogonid material reported from Egypt by Kieffer (1925) was present in Egyptian collections.

***Atrichopogon (Psilokempia) helles* sp. n. (Figs 1–2)**

A medium-sized species, without any specifically distinctive ornamentation but differing from other species in genital structure.

♂. Described from holotype and one paratype. Wing length 1,3 mm. Generally brown in various shades; thorax, head, and postnotum very dark, remainder paler.

Head: Dark brown, clypeus and mouthparts paler. Eyes narrowly separated, bare. Antenna with torus dark brown, rest paler; plume light brown; segments 3–9 not separated from one another, globular to subglobular; relative lengths of 11–15 are 13–23–47–40–47; segment 15 bears a prominent papilla measuring 4 units; antennal ratio (12–15/3–11) 1,0. Palpus (Fig. 2) 5-segmented; segments 1–2 and base of 3 very pale, rest light brown; 3 very slightly swollen near apex, where it bears a deep sensory pit; relative lengths of 3–5 are 30–15–20.

Thorax: Mesonotum mainly very dark brown with 2 narrow but distinct, pale ad-median longitudinal stripes, shoulders and lateral margin yellowish, scutellum entirely yellow, with 4 strong bristles; postnotum black; pleuron brown. Wing devoid of any ornamentation and macrotrichia; first radial cell very narrow, second open; costal ratio 0,65. Legs pale yellowish or light brown with no distinguishing features.

Abdomen: Light brown to brown throughout, including genitalia. Genitalia (Fig. 1) noticeably enlarged; characteristic features are large median setiferous lobe on margin of sternum 9 and very strong, sharply pointed dististyle. In the absence of any parameres, the aedeagus is apparently activated by basistyles.

Distribution. South Africa.

Types. Holotype ♂, 1 ♂ paratype, Augrabies Falls, Gordonias District, Cape Province, 27–28.x.1980, De Meillon & Van Eeden, UVL trap (SAIMR, USNM).

Discussion. At first sight because of its colour and enlarged genitalia, this species was mistaken for *Atrichopogon aegyptius*, with which it was taken. Closer examination showed that the two species were quite distinct in genitalic characters. The enlarged setiferous lobe on the margin of the ninth sternum is unique among Sub-saharan species for which the males are known.

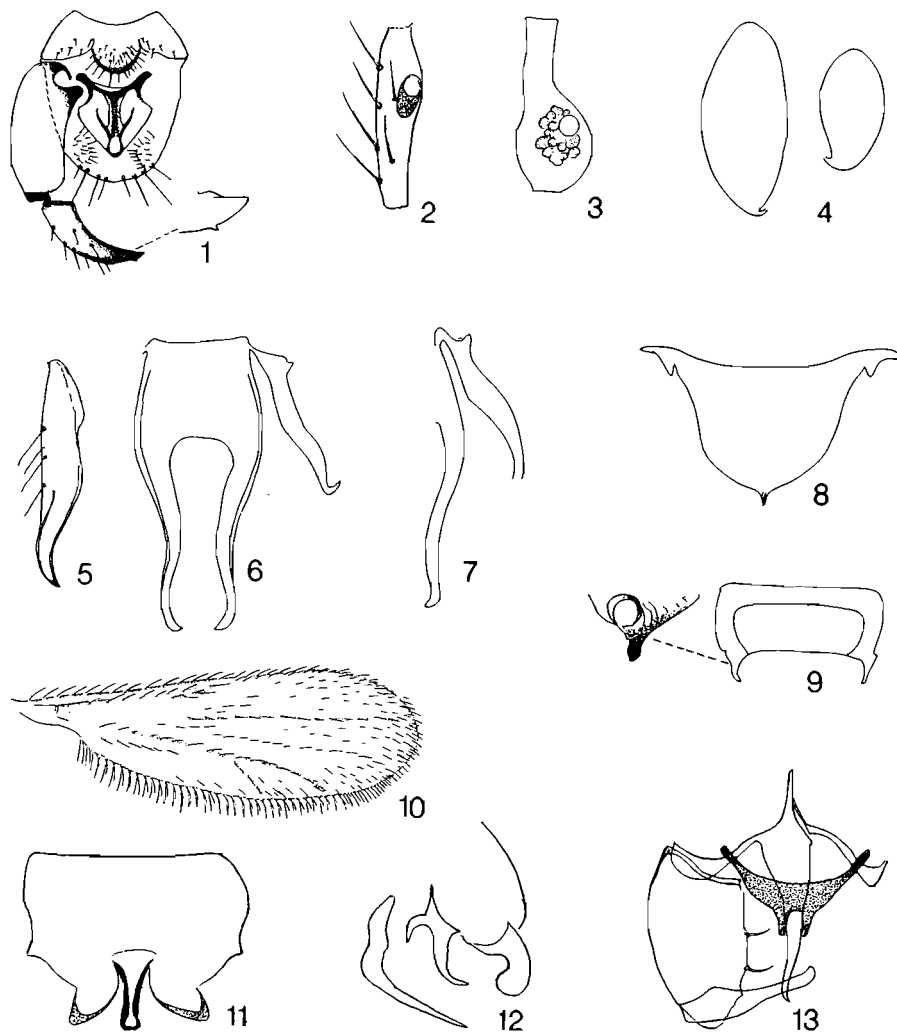
The species is named for Helle, the sister of Phrixus who, according to legend, fled with him from the wrath of their stepmother. In their flight Helle fell into a sea which to this day is known by the name of the Hellespont.

Genus *Forcipomyia* Meigen***Forcipomyia (Forcipomyia) vesicula* sp. n. (Figs 3–9)**

A large species without distinct ornamentation; scales lacking; one of a group in which specific differences, sometimes of a minor nature, are to be found in the male genitalia and female spermathecae.

♂. Described from the holotype and 5 paratypes. Wing length 1,3–1,5 mm.

Head: Black, mouthparts a shade paler; eyes bare, separated by width of one facet or less. Antenna with torus black, remainder pale brown; segments 4–10,



Figs 1-2, *Atrichopogon helles*; 3-9, *Forcipomyia vesicula*; 10-13, *Dasyhelea cellulana*: 1, male genitalia; 2, male third palpal segment; 3, female third palpal segment; 4, female spermathecae; 5, male dististyle; 6, male parameres, ventral view; 7, same, side view; 8, male aedeagus; 9, male ninth tergum; 10, male wing; 11, male ninth sternum; 12, left to right, male parameres, aedeagus and ninth sternum, lateral view; 13, male genitalia (partial), ventral view.

globular to subglobular and not clearly separated from one another; antennal ratio (12-15/3-11) 1,2; relative lengths of 11-15 are 6-26-27-20-20, segment 15 with a long nipple measuring 3 units. Palpus 5-segmented, much longer than proboscis; segment 3 strongly swollen on basal half, where it bears a deep and irregular sensory pit as figured for ♀ (Fig. 3); relative lengths of 2-5 are 10-30-12-11. *Thorax*: Mesonotum very dark brown to black and this includes the scutellum and postnotum; extreme anterolateral margin of mesonotum and shoulders paler;

pleuron brown with mesepisternum basally and ventrally black, thus contrasting sharply with the otherwise brown to light brown coxae and venter of thorax. Wing with fine sharp setae only and no scales; costal ratio 0,42–0,45; pale spot lacking at end of costa. Legs almost entirely light brown but hind femur slightly infuscated on distal half or less; fore tibia with a short apical comb of long slender teeth, apical spur about as long as width of tibia; hind tibia with complete transverse comb of about 20 strong teeth and an apical row of 10 subequal pale spines; apical spur as in fore tibia; tarsal ratios about 1,0 on all legs.

Abdomen: Dorsally dark brown, basally with segments 6–9 and genitalia blackish; spiracular area in segments 6–8 produced into a strongly pigmented triangular lobe (Fig. 9). Genitalia (Figs 5–8) with general structure typical of subgenus; sternum 9 with apical border produced and in some specimens not complete; tergum short, barely reaching to middle of basistyles, with a small pad-like apicolateral lobe without any strong bristles; basistyle 2,5 times as long as wide, without any striking features; dististyle (Fig. 5) strong and beak-like apically; aedeagus (Fig. 8) with transverse anterior margin, rounded caudad with a sharp caudomedian point; parameres (Figs 6–7) fused proximally for about a third of total length, stout and sinuate distally with a characteristic bend at extreme tip, basal apodemes long and strong.

♀. Described from allotype and 5 paratypes. Wing length 1,54–1,58 mm. In general appearance as ♂ except for abdomen which is uniformly brown to dark brown dorsally and does not show modified areas around spiracles of segments 6–8. Only differences from ♂ will be described below.

Head: Antenna with torus brown, rest very dark brown to black; segment 3 globular with very short stem, 4–10 slightly longer than wide, 11–14 flask-shaped, each with a short neck and on the whole of about the same size as 4–10; 15 a trifle longer, bearing a short nipple; relative lengths of segments 10–15 are 15–20–20–22–22–29; 15 with nipple measuring 4 units; antennal ratio $(11-15/3-10)$ 0,76. Palpus (Fig. 3) slightly more swollen basally than in ♂.

Thorax: Costal ratio 0,47. Tarsal ratios as in ♂.

Abdomen: 2 spermathecae (Fig. 4), bladder-like with thin wall, unpigmented, each with a curved neck as illustrated; measuring $0,322 \times 0,156$ mm and $0,187 \times 0,104$ mm in natural form.

Distribution. South Africa.

Types. Holotype ♂, allotype ♀, paratypes 5 ♂, 5 ♀, Augrabies Falls, Gordonias District, Cape Province, 27–28.x.1980, De Meillon & Van Eeden, UVL trap (SAIMR, USNM, NM). Natal Museum Type No. 2591.

Discussion. Of the species with a similar type of male genitalia, *Forcipomyia vesicula* most closely resembles *F. cirrhosa* Clastrier, Rioux & Descous from Chad and *F. suberis* Clastrier from Algeria. In *cirrhosa* the paramere is drawn to a fine point apically, the spermathecae are highly pigmented, subequal, and much smaller ($0,115 \times 0,065$ mm), and the tarsal ratios much lower (0,72–0,84). In *F. suberis* the paramere is blunter apically but not slightly hooked, the fused part of the parameres is much longer, the spermathecae though of similar shape are much

smaller ($0,095 \times 0,65$ mm and $0,080 \times 0,045$ mm) and the necks are not bent, and the female tarsal ratios are 0,70–0,90.

Subfamily Dasyheleinae

Genus *Dasyhelea* Kieffer

Dasyhelea cellulana sp. n. (Figs 10–13)

A small blackish species without any noticeable ornamentation but with characteristic ♂ genitalia.

♂. Described from the holotype. Wing length 0,7 mm.

Head: Black, mouthparts brown; eyes narrowly separated, hairy. Antenna missing. Palpus 5-segmented, segment 1 minute, segment 3 parallel-sided, long and slender without a sensory pit; segment 5 not in position to measure, but segment 3 probably a trifle longer than 4 + 5.

Thorax: Black dorsally including postnotum; scutellum and pleuron a shade paler, former with six strong bristles. Wing (Fig. 10) without any markings and poorly supplied with macrotrichia; no radial cells; costal ratio 0,43. Legs brown throughout and paler than pleuron; hind tibia with a subapical comb of about 15 rather strong teeth; an apical row of 6 long, strong, pale, subequal bristles; apical spur small and spine-like, about half as long as apical breadth of tibia; fore tibia with a short subapical slanted comb of weak teeth which could not be counted, apical spur apparently absent; tarsomere 4 on all legs about as long as 5; claws gently curved, equal and simple, empodium absent.

Abdomen: Black. Genitalia (Figs 11–13) strongly sclerotised; sternum 9 unique with apical border divided into three lobes as in Fig. 11, in side view (Fig. 12) median lobe is seen as a thick, curved, knob-like process; tergum 9 broadly and evenly rounded distally without any striking apicolateral processes; basistyle nearly twice as long as broad, unmodified; dististyle as shown; aedeagus heavily sclerotised and of form typical of the genus; parameres fused as shown in Fig. 13.

Distribution. South Africa.

Type. Holotype ♂, Makonde, Venda, 10–11.ix.1980, H. Cross (SAIMR).

Discussion. The development of the apical margin of the ninth sternum is unique in *Dasyhelea*; this plus minor differences in the shape of the parameres leaves no doubt that the species is distinct from all others for which males are known.

Dasyhelea ismailiae Macfie, 1943

New Record. SOUTH AFRICA: *Cape Province*, Augrabies Falls, Gordonia District, 28.x.1980 (De Meillon & Van Eeden), UVL trap, 3 ♂ (SAIMR, USNM, Natal Mus.).

Discussion. This is the first record in the Subsaharan Region of this Egyptian species originally described from three males from Moascar, Ismailia. There are no other records, and its occurrence at the isolated Augrabies Falls is of some interest.

Subfamily Ceratopogoninae

Tribe STILOBEZZIINI

Genus *Alluaudomyia* Kieffer*Alluaudomyia anserina* sp. n. (Figs 14–19)

A small species; mesonotum mottled; wing with two anterior dark spots and dark streaks along the veins; legs banded.

♂. Described from the holotype and 3 paratypes. Wing length 1,1–1,2 mm.

Head: Brown, mouthparts paler; eyes narrowly separated, bare. Antenna brown with torus darker; segment 3 with a long stalk; 4–12 not clearly separated from one another; relative lengths of 12–14 are 20–50–46–44, 15 with subterminal bristle; antennal ratio (12–15/3–11) 0,91–0,94. Palpus 5-segmented; lengths of 3–5 subequal, 3 not swollen and without sensory pit but with cluster of sensilla at inner apex.

Thorax: Mesonotum dorsally with an indefinite pattern of brown and lighter areas somewhat as illustrated for *A. vicina* and *brevicosta* by Clastrier (1960); scutellum slightly darkened medially where it bears a pair of closely-set strong bristles, laterally on each side is a single similar bristle; postnotum very dark brown; pleuron brown with usual pale longitudinal stripe just below border of mesonotum. Halter entirely white. Wing (Fig. 14) with 2 small dark anterior spots; the most prominent one at end of costa and slightly below it; other on R_{1+2} ; a third very light infuscation on radius extending on to M_{1+2} proximad of second dark spot; posterior veins also slightly infuscated along their entire lengths; a few macrotrichia at wing tip; costal ratio 0,52. Legs dark brown; narrow pale rings subapically on all femora and sub-basally on hind tibia; mid femur also with broad pale band (0,4 its length) starting at 0,4 from base of femur; mid tibia with broad pale band on proximal portion and a narrow pale ring subapically; hind tibia with broad basal and subapical pale bands; fore and hind basitarsi dark, especially on hind leg; hind femur with a double row of about 15 short, stout, sharp bristles, one row somewhat laterally and other along ventral margin; fore tibia with a transverse comb of about 20 rather long teeth; beyond this but laterally a strong spine, and an apical spur, stout, strong, and longer than apical width of tibia; hind tibia with subapical comb somewhat crescentic; an apical slanted row of 8 strong bristles, and apical spur pectinate, short but stout; hind trochanter with a pair of strong, short, black spines anteriorly; hind basitarsus as usual with an anterior row of palisade setae.

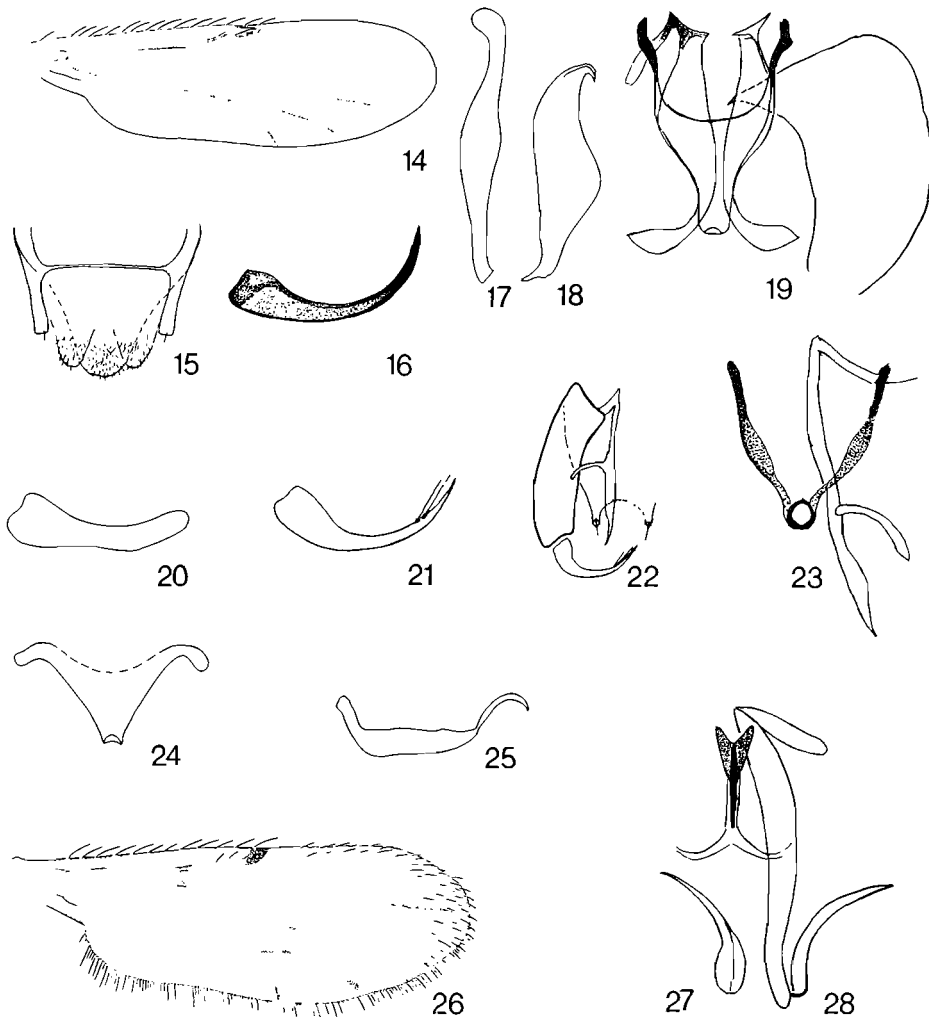
Abdomen: Brown to light brown. Genitalia (Figs 15–19) short and broad, with general features as usual for the genus. The most distinctive feature, serving to identify the species, is the paramere (Fig. 19) which is shaped distally like a goose head and neck (thus the species name). Dististyle (Fig. 16) evenly curved, strongly sclerotised and narrowing to a long, sharp, black apex much as in *marmorata* Carter, Ingram & Macfie (1921) and *similiforceps* Clastrier (1960). The paramere is somewhat similar to that of the latter species.

♀. Not definitely known; see below.

Distribution. South Africa.

Types. Holotype ♂, 3 ♂ paratypes, St Lucia, Natal, 21.x.1980, N. du Toit (SAIMR, USNM, NM). Natal Museum Type No. 2592.

Discussion. The male paramere immediately separates *A. anserina* from its congeners. A female caught with the males could not with any certainty be separated from *vicina* which in fact could very well be the female of *similiforceps* Clastrier described a few pages later (Clastrier 1960). These small flies are very fragile and difficult to prepare for permanent mounting.



Figs 14–28, *Alluadomyia* spp.; 14–19, *A. anserina*; 20–23, *A. falcata*; 24–28, *A. lunata*: 14, 26, male wings; 15, apex of male ninth tergum; 16, 20, 21, male dististyle; 17, 18, male paramere and aedeagus, respectively, side view; 19, male aedeagus, parameres and basistyle, ventral view; 22, male basistyle, dististyle, paramere and portion of ninth tergum, ventral view; 23, male aedeagus and paramere, ventral view; 24, male aedeagus, ventral view; 25, male paramere, side view; 27, appendage of male paramere; 28, male paramere and central sclerite, ventral view.

Alluaudomyia falcata sp. n. (Figs 20–23)

A small species with two-spotted wing, banded legs, and hairy eyes.

♂. Described from the holotype. Wing length 0,85 mm.

Head: Dark brown; eyes narrowly separated, densely hairy. Antennae missing. Palpus very pale; segments 3–5 subequal, 3 not swollen and without sensory pit.

Thorax: Uniformly dark brown, shoulders of mesonotum and subspiracular plate of pleuron a shade paler. Wing with pattern similar to that of *A. anserina* (Fig. 14) but membrane slightly smoky. Legs dark brown with prominent narrow pale rings subapically on all femora and sub-basally and subapical on all tibiae, those on hind tibia slightly broader; tarsi pale but apices of fore and mid basitarsi and all of hind basitarsus dark brown; tibial combs as usual, hind tibial comb with 7 spines.

Abdomen: Dark brown. Genitalia (Figs 20–23) poorly sclerotised, very pale (staining necessary to show internal structures), elongate, half again as long as broad. Basistyle (Fig. 22) about 4 times as long as wide, of even width and slightly arcuate; dististyle (Fig. 21) very slender and curving, hook-like, drawn out to a long slender point much as in a sickle, 2–3 long fine setae borne on mesal side near tip. Aedeagus as in Fig. 23, the anterior margin not sclerotised; parameres (Figs 22–23) separate, each with long slender basal apodeme, the main body appearing as a nearly straight slender strip of chitin with tip pointed, lanceolate, bearing a slender crescentic process on outer side just past mid length.

♀. Unknown.

Distribution. South Africa.

Types. Holotype ♂, Sudwala, Nelspruit District, Transvaal, 15.x.1980, De Meillon, Cross & Du Toit, UVL trap (SAIMR).

Discussion. The parameres of the male genitalia are somewhat similar to those of *A. tauffliebi* Clastrier, 1960, but differences are obvious as can be seen from the illustrations; furthermore the dististyle in *tauffliebi* is broad and heavy compared with the slender hook of *falcata*. The hairy eyes place *falcata* near *congolensis* de Meillon, 1939, which is known only from a female; but in *congolensis* the wing has only one dark spot, that at the end of the costa, and the legs are pale except for dark knee spots, the tip of the hind tibia, and the hind basitarsus.

Alluaudomyia lunata sp. n. (Figs 24–28)

A small dark species with wing bearing two dark anterior spots, two small proximal spots, and eight linear spots along the veins as figured.

♂. Described from the holotype and 1 paratype. Wing length 1,0 mm.

Head: Dark brown, mouthparts paler; eyes narrowly separated, bare. Antenna with torus dark brown, flagellum paler, plume blackish proximally; segment 3 with long stalk, 4–12 barrel-shaped, not distinctly separated from one another; relative lengths of 11–15 are 15–15–40–25–30, terminal segment pear-shaped; antennal ratio $(12-15/3-11)$ 0,8. Palpus 5-segmented, segment 3 not swollen and without sensory pit; relative lengths of 3–5 are 15–10–17.

Thorax: Mesonotum dark brown except for paler shoulders, scutellum light brown, postnotum dark brown, pleuron dark brown ventrally with a broad pale band separating it from mesonotum. Wing (Fig. 26) with a few macrotrichia confined to anterior margin and extreme apex; pattern as figured; 2 prominent dark spots, one covering apex of costa, other just before r-m crossvein, in addition linear dark spots near bases and apices of veins M_1 and M_2 , on midportion of mediocubital stem, at base and at tip of vein M_{3+4} and at tip of vein Cul, and 2 small dark spots in cell M_2 behind midportion of medial stem and in middle of distal portion of anal cell. Legs dark brown with usual pattern of narrow pale rings as described for *A. falcata*; tarsi and tibial combs also as in *falcata*.

Abdomen: Mainly light brown. Genitalia slightly longer than broad; sternum 9 with caudal margin moderately excavated, tergum 9 poorly sclerotised and tapering to slender, rounded tip. Basistyle about twice as long as wide; dististyle stout and only slightly curved, with bluntly rounded tip. Aedeagus (Fig. 24) about as long as broad with moderately deep basal arch, tip moderately slender and bent ventrad. Parameres (Figs 25, 27–28) with short basal apodeme, each a long slender strip of chitin, nearly straight, and bearing on the outer side at tip a crescent-shaped appendage directed lateroproximad. A prominent central sclerite present in cavity between aedeagus and parameres; its base is darker and moderately expanded, while the tip is divided in an almost transparent fork (Fig. 28).

♀. Unknown.

Distribution. South Africa.

Types. Holotype ♂, 1 ♂ paratype, Soutini, Gazankulu, 18.x.1980, De Meillon & Cross, UVL trap (SAIMR, USNM).

Derivation. The name is derived from the crescent-shaped terminal appendage of the parameres.

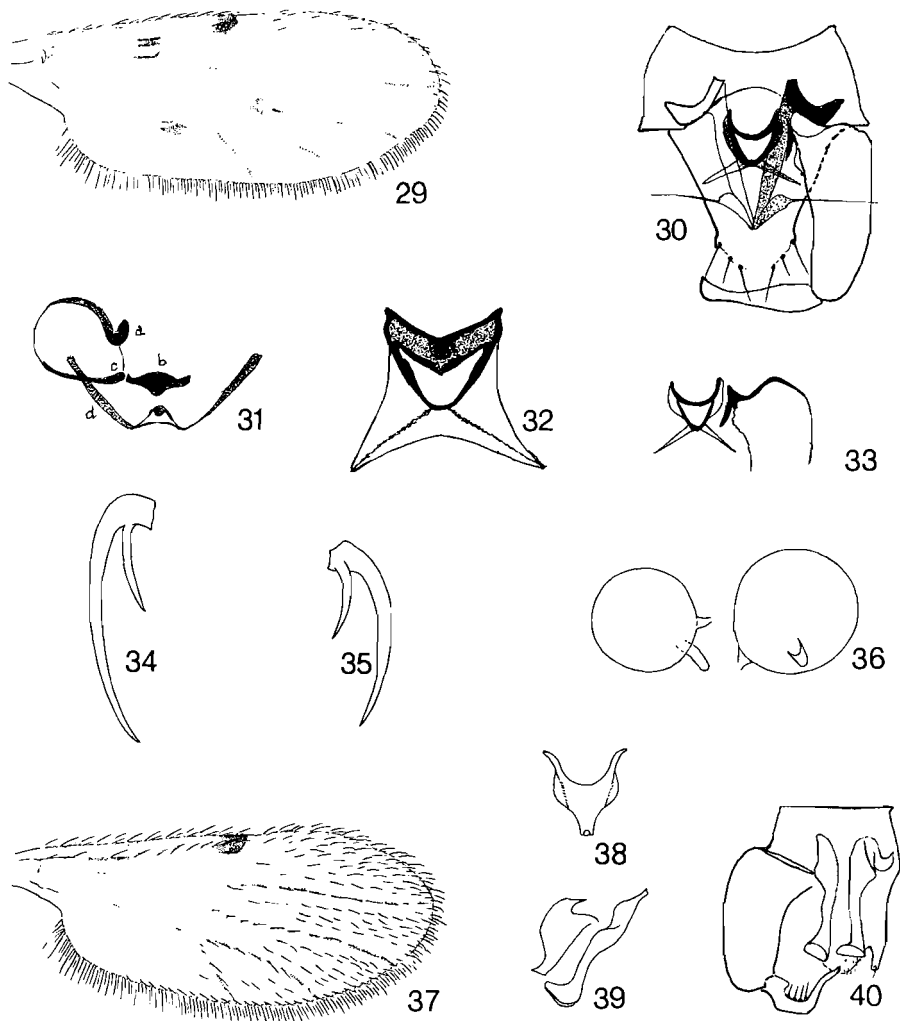
***Alluaudomyia claudia* de Meillon (Figs 29–33)**

Alluaudomyia claudia de Meillon, 1942b: 92 (♂, ♀, pupa; Zimbabwe; fig. ♀ wing, ♂ aedeagus and parameres, pupal respiratory horn).

The male is redescribed from Gazankulu specimens.

Head: Black, clypeus and mouthparts paler; eyes narrowly separated, bare. Antenna with torus black, rest paler except segments 13–15 which are infuscated; 4–12 slightly longer than wide, not distinctly separated; relative lengths of 12–15 are 16–30–23–30; segment 15 pear-shaped, 3 times as long as wide, with a terminal bristle; antennal ratio $(12-15/3-11)$ 0.74. Palpus uniformly brownish, slightly longer than proboscis, 5-segmented; segment 3 parallel-sided and without sensory pit; relative lengths of segments 2–5 are 8–16–15–20.

Thorax: Mesonotum dark brown dorsally with a broad pale lateral band separating it from the darker pleuron (a generic feature); scutellum pale with a central dark spot; postnotum dark brown; pleuron dark brown. Wing (Fig. 29) with 4 dark spots on the wing field and a small spot at the termination of the lower branch of the media and that of the upper and lower branches of the cubitus; only 1 radial cell clearly seen in dry wing; a few macrotrichia at wing tip and along



Figs 29–40, *Alluaudomyia* spp.; 29–33, *A. claudia*; 34–40, *A. soutini*: 29, 37, male wing; 31, cross-section (diagrammatic) of male (a) paramere, (b) central sclerite, (c) basistyle, and (d) aedeagus; 32, aedeagus and central sclerite, mounted flat; 30, male genitalia; 33, detail of aedeagus, central sclerite, and base of basistyle; 34, 35, claws of fore leg and hind leg (respectively) of female; 36, female spermathecae; 37, male wing; 38, male aedeagus; 39, male aedeagus (left) and paramere, side view; 40, male genitalia (partial).

anterior margin of wing; costal ratio 0,51. Legs dark brown, with well-defined pale bands as described for *A. falcata*; tarsi pale except hind basitarsus dark brown; tibial spines and spurs and tarsal claws typical of genus.

Abdomen: Dorsally black, mostly pale ventrally. Genitalia (Figs 30–33) slightly longer than broad; sternum 9 with moderately deep caudomedian excavation, tergum 9 tapered to narrow rounded apex. Basistyle 2,5 times as long as wide

basally, paler in midportion; dististyle pale, slightly bulbous basally, without any setae, moderately slender and slightly curved distally. Aedeagus (Fig. 31) somewhat triangular, poorly pigmented except for the bluntly pointed distal process. Parameres (Fig. 30) widely separated, each with moderately stout, curved, basal apodeme; main body slender and nearly straight, ending distally in a hinge from which a short broad flange is directed ventrolaterad and bears distally a long, slender hyaline filament. Between base of aedeagus and parameres lies a sclerite, here called the central sclerite (Figs 30–33), whose structure and relationship to other parts of genitalia are difficult to ascertain *in situ*; in cross-section (Fig. 31) this sclerite appears as in Fig. 31b in relation to the aedeagus and basistyle; when dissected out and mounted flat it appears as in Fig. 32.

New Records. SOUTH AFRICA, 4 ♂, Soutini, Gazankulu, 18.x.1980, De Meillon & Cross, UVL trap (SAIMR, USNM, NM). *Cape Province*, 1 ♂, Gordonias District, Augrabies Falls, 26.x.1980, De Meillon & Van Eeden, UVL trap (USNM).

***Alluaudomyia soutini* sp. n. (Figs 34–40)**

A small brown species; wing with two dark spots, first radial cell absent, second very small; general appearance typical of the genus.

♂. Described from the holotype. Wing length 1.0 mm.

Head: Dark brown, mouthparts paler; eyes narrowly separated, bare. Antenna with torus dark brown, rest of antennae missing. Palpus longer than proboscis, 5-segmented, segment 3 not swollen and without a sensory pit; relative lengths of segments 3–5 are 12–12–15.

Thorax: Mesonotum dark brown; pleuron dark brown but with a broad pale band separating it from the mesonotum; scutellum with a large dark spot medially; postnotum dark brown. Wing (Fig. 37) with 2 dark spots; an intense one covering second radial cell and the other more diffuse involving r–m crossvein and a small part of area enclosed by vein M_{1+2} and radius; macrotrichia sparse and confined to distal half of wing; first radial cell obliterated, second small and confined to extreme apex of costa; costal ratio 0.48. Legs mainly brown, more intense on hind leg; all femora with subapical, all tibiae with sub-basal and subapical, narrow pale rings, except pale rings broader on hind tibia, and sub-basal pale band on mid tibia extending to past midlength of tibia; tarsi pale except hind basitarsus dark brown; tibial combs and spurs and tarsal claws as usual in genus.

Abdomen: Dorsally light brown, paler ventrally. Genitalia (Figs 38–40) about as broad as long; sternum 9 with caudal margin poorly sclerotised, indefinite; tergum 9 short and relatively broad, poorly sclerotised apically but apicolateral processes well developed. Aedeagus (Fig. 38) with convex sides, rounded anterior arch to a third of total length, and narrowed distally to a slender median process. Basistyle stout, convex, tapering distally; dististyle (Fig. 40) stout at base, sharply bent in midportion, distal third slender and slightly bent in reverse direction, about 4 setae arising from papillae on inner margin of abruptly bent portion. Parameres separate, each with short, stout, curved basal apodeme, base of main

body stoutly swollen, then abruptly narrowed and then gradually expanding in slender midportion; apex broadly expanded in a rounded disc-like cap abruptly bent ventrad (Fig. 39).

♀. General appearance as in ♂, but a little darker. Wing length 1,0 mm.

Head: As in ♂; mandible with 10–11 large teeth and a few smaller ones. Antenna with torus dark brown, rest paler; segments 4–10 vase-shaped, increasing in length very slightly to 10 which is nearly 3 times as long as wide; relative lengths of 10–15 are 17–22–23–25–20–25; antennal ratio (11–15/3–10) about 1,0. Palpus 4-segmented, pale in colour, segment 3 not swollen and without sensory pit; segments 3–5 with relative lengths of 14–10–15.

Thorax: As in ♂. Wing as in ♂, with first radial cell obliterated, second much longer than in ♂; macrotrichia extending proximad into cell M_4 ; costal ratio 0,5 or a little less. Legs as in ♂ but claws (Figs 34–35) unequal.

Abdomen: As in ♂. 2 spermathecae (Fig. 36), globular or subglobular, dark brown, measuring $0,052 \times 0,046$ mm and $0,039 \times 0,039$ mm; smaller spermatheca with a sausage-shaped appendix, 0,020 mm long, larger with a minute appendix; ducts not pigmented in either case.

Distribution. South Africa.

Types. Holotype ♂, allotype ♀, Soutini, Gazankulu, 18.x.1980, De Meillon & Cross, UVL trap (SAIMR).

Discussion. The two-spotted wing, general coloration, structure of the male genitalia, and nature of the spermathecae place this species in the *marmorata* group of species (Wirth & Delfinado 1964). The spermathecae of *A. marmorata* (Carter, Ingram & Macfie 1921) as redescribed by Clastrier (1958) are similar but the elongated appendix is much longer than in the new species. Also in *A. marmorata* the female claws are equal. The genitalia of the new species differ from those of *marmorata* in having the dististyle more acutely bent, the parameres shaped differently, and the ninth tergum with more prominent apicolateral processes. *A. vicina* Clastrier (1960), known only from the female, also resembles *soutini*, but in that species the third palpal segment bears a sensory pit, the second radial cell is much shorter, and the macrotrichia more restricted to the distal half of the wing.

The females of eight Subsaharan species whose wings bear two prominent dark spots may be separated by the following key. The males of these species are more readily separated by comparing figures of the male genitalia.

- 1 Wing with short lengths of some veins infuscated **lunata** sp. n.
- Wing veins, other than costa, radius, and base of media, pale 2
- 2 Claws equal on all legs **marmorata** (Carter, Ingram & Macfie)
- Claws unequal on all legs 3
- 3 One spermatheca present **demeilloni** Clastrier & Wirth
- Two spermathecae present 4
- 4 Spermathecae without diverticula **bimaculata** Clastrier & Wirth
- Spermathecae with diverticula 5
- 5 Costal ratio less than 0,5 **brevicosta** Clastrier
- Costal ratio about 0,5 6

- 6 Eyes hairy **congolensis** de Meillon
 – Eyes bare 7
 7 Third palpal segment with sensory pit **vicina** Clastrier
 – Third palpal segment without sensory pit **soutini** sp. n.

Genus *Kolenohalea* de Meillon & Wirth

***Kolenohalea luciae* sp. n.** (Figs 41–44)

A medium-sized dark brown species with spotted wings and banded legs.

♂. Described from holotype ♂ and 2 paratypes. Wing length 1,3 mm.

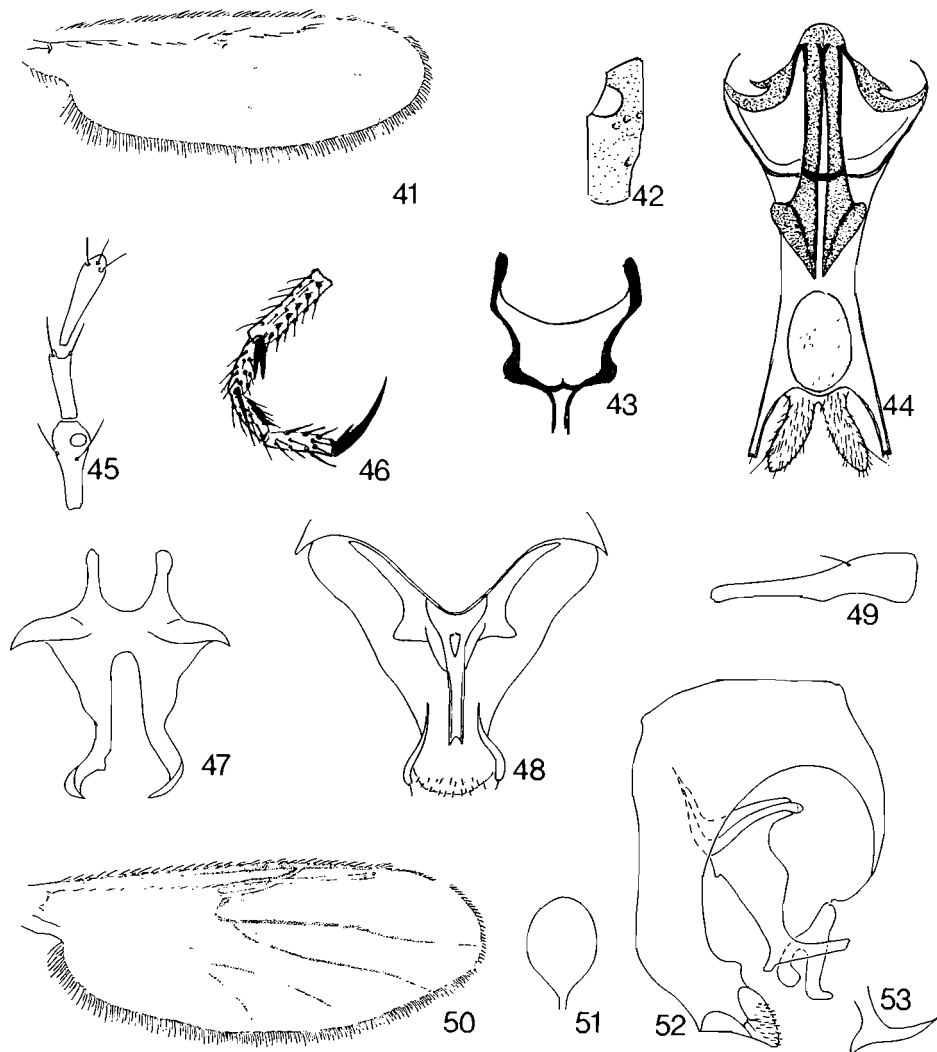
Head: Dark brown above; eyes separated by about the width of 2 facets, bare. Antenna with torus dark brown, segments 3–10 pale, 11–15 a shade darker; segment 3 with a long stalk; 4–10 subglobular, imperfectly separated from one another; 15 with terminal bristle; relative lengths of 11–15 are 30–27–38–35–43. Palpus 5-segmented, longer than proboscis, segments 2–5 with relative lengths 15–23–13–22; segment 3 (Fig. 42) slightly swollen in midportion with a deep sensory pit on mesal side just beyond midlength.

Thorax: Mesonotum with a broad dark brown band mesally which follows on to the scutellum; laterally light brown and scutellum yellowish; postnotum and pleuron dark brown. Wing with four dark spots as in Fig. 41; without any macrotrichia; second radial cell slightly longer than first; costal ratio 0,69. Legs with structure as in the genus including modified hind basitarsus and whip-like sensory hair on fourth tarsomeres; mainly dark brown with pale areas as follows: a broad white submedian band on hind femur, mid and fore femora dark only on about apical fifth; hind tibia with a narrow subapical pale band; fore and mid tibiae dark only at apex; hind basitarsus brown, tarsi otherwise paler; fore basitarsus with four evenly spaced black spines; fore tibia with a short slanted row of about 20 very long teeth, apical spur longer than width of tibia, very strong and stout; subapical comb on hind tibia not clearly defined, apical row of 8 strong bristles of which the middle ones are longer, apical spur a short, sharp, stout spine.

Abdomen: Dark brown dorsally and ventrally. Genitalia greatly elongated and about half the length of the abdomen itself. Tergum 9 (Fig. 44) greatly narrowed and elongated, apicolateral processes greatly lengthened and bearing between them two large setiferous lobes (cerci). Basistyle elongated, about 4 times as long as broad; dististyle gently and evenly curved, parallel-sided throughout and bearing a few teeth at apex. Aedeagus (Fig. 43) well defined with sclerotised margins as figured. Parameres doubtfully separate at bases, each a long strip reaching about midlength of tergum 9, expanded apically (Fig. 44).

♀. Described from allotype ♀ and 4 paratypes. General coloration as in ♂ but more clearly defined. Wing length 1,7 mm.

Head: Colour and eyes as in ♂. Antenna with colour as in ♂, segment 3 without a long stalk; segments 4–10 slightly vasiform and clearly separated from one another; relative lengths of segments 10–15 are 22–36–35–41–41–40; 15 with terminal bristle as in ♂; antennal ratio $(11-15/3-10)$ 1,2. Palpus 5-segmented, dark brown as in ♂; relative lengths of segments 2–5 are 14–17–6–13; segment 3 as in



Figs 41-44 & 50, *Kolenohoelea luciae*; 45-49, 51-53, *Monohelea makonde*: 41 & 50, male wing; 42, male third palpal segment; 43, male aedeagus; 44, male parameres and ninth tergum; 45, male palpal segments 3-5; 46, male tarsomeres 2-5 of hind leg; 47, male parameres; 48, male aedeagus, ninth tergum and posterior portion of ninth sternum; 49, male dististyle; 51, female spermathecae; 52, male genitalia, side view; 53, detail of tip of paramere, side view.

♂ but sensory organ, though with a large opening, is relatively shallow. Mandible with 8 large teeth.

Thorax: Colour pattern of mesonotum somewhat variable but essentially as in ♂ of three broad dark longitudinal bands, central one of which continues on to scutellum, which otherwise is yellowish. Wing as in ♂ with four dark spots, one on crossvein, one on R_1 , one enveloping end of costa, and a final large, slightly more

diffuse one beyond end of costa and about halfway to wing tip; macrotrichia absent; costal ratio 0,72. Legs with colour and banding as in ♂, but more definite; apical spur on fore tibia shorter and stouter than in ♂; claws unequal on all legs.

Abdomen: Largely whitish dorsally and ventrally with sides sclerotised and black. Two spermathecae; large, heavily sclerotised, with prominent necks; minute, elongated, rudimentary spermatheca present; the larger functional spermatheca measures $0,091 \times 0,060$ mm.

Distribution. South Africa.

Types. Holotype ♂, allotype ♀, 2 ♂ and 4 ♀ paratypes, St Lucia, Natal, 21.x.1980 N. du Toit, UVL trap (SAIMR, USNM, NM). Natal Museum Type No. 2594.

Discussion. This species differs from all other *Kolenohalea* except *mira* de Meillon & Wirth (1981a) in having the wing spotted. From *mira* the male is abundantly distinct in the shape of the apex of the paramere which is expanded and bears no teeth on the inner apex; the aedeagus is also different in being sclerotised and of a different shape. We cannot separate the females of the two species. *K. mira* (including females) was taken in the north-eastern Transvaal at an altitude of c. 600 m or more above sea-level, whereas the present species (including females) was captured on the coast at St Lucia, several hundred kilometres south.

Genus *Monohelea* Kieffer

Monohelea makonde sp. n. (Figs 45–53)

♂. Described from the holotype; 6 paratype ♂ showed no significant differences. Wing length 1,3 mm.

Head: Black, clypeus and mouthparts brown. Eyes widely separated, bare. Antenna with torus black, flagellum paler; segments 4–11 only slightly wider in mid-portions, 12 elongated slightly more than twice as long as its greatest width; relative lengths of 12–15 are 15–50–17–18; 15 with apical seta terminal or slightly subterminal; antennal ratio (12–15/3–11) 0,8. Palpus (Fig. 45) longer than proboscis by length of last segment; 5-segmented, segment 3 expanded distally where it bears a shallow, circular, sensory organ near the inner apical angle; relative lengths of segments 3–5 are 5–4–7.

Thorax: Mesonotum, pleuron, scutellum and postnotum black; mesonotum dorsally with fairly strong erect setae; scutellum with 4 strong and a few smaller bristles. Wing (Fig. 50) strongly patterned as figured; radial cells rather narrow, the second nearly twice as long as first; macrotrichia absent; costal ratio 0,7. Halter white. Legs unarmed, black but tarsi, especially those of fore and mid legs light brown; hind femur and tibia enlarged; apex of hind tibia with a distinct darkened patch of densely packed short setae, bordered apically by a long slanted comb of numerous, moderately long teeth, followed by a row of eight subequal, strong, short setae; apical spur short and brush-like; mid and fore femora and tibiae not enlarged, paler than on hind leg; apex of fore tibia with a slanting comb of more than 20 teeth, apical spur sharply pointed, spine-like, about as long as tibia is wide at apex; hind tarsi (Fig. 46) somewhat thickened, basitarsus slightly arcuate,

a heavy black spine at the base and 2 such spines at apex, between these a complete row of palisade setae; hind tarsomere 2 with 2 strong black spines apically; tarsomere 4 longer than 3 or 5 and bearing a row of 4 bulbous hairs on anterior margin; tarsomere 5 unarmed and bearing a long single claw with a small basal spur; fore and mid tarsi pale and unmodified, claws small, equal and simple.

Abdomen: Dorsally black, ventrally slightly paler. Genitalia black as rest of abdomen, strongly sclerotised; basistyle slightly more than twice as long as wide basally; dististyle (Fig. 49) gradually narrowing to a rounded apex and with only one moderately strong seta. Posterior margin of ninth sternum with a pronounced median lobe (Fig. 48); tergum 9 (Fig. 48) narrowed to apex. Aedeagus (Fig. 48) largely membranous and very fragile, posteriorly with a lobe best seen in side view (Fig. 52). Parameres (Fig. 47) strong, well developed, and joined near bases, apical arms widely separated, each strongly sclerotised and sharply bent apically as can best be seen in side view (Figs 52–53).

♀. Described from allotype; four paratypes showed no significant differences. Wing length 1,3 mm; ornamented as in ♂ but broader, width 0,50 mm compared to 0,40 mm in ♂. General coloration as in ♂.

Head: As in ♂, eyes bare and widely separated. Antenna with first segment broad, with 3 long bristles; torus black; flagellar segments paler; segments 4–10 barrel-shaped, longer than wide, 10 being slightly more than twice as long as wide; relative lengths of 10–15 are 47–50–50–50–50–60; segment 15 with apical bristle slightly subterminal; antennal ratio slightly less than 1,0. Palpus essentially as in ♂.

Thorax: As in ♂. Wing as in ♂ but broader; costal ratio 0,7. Legs as in ♂ both in colour and structure.

Abdomen: Uniformly black, though venter a shade paler. Two spermathecae (Fig. 51), pear-shaped, uniformly very dark, measuring $0,075 \times 0,056$ mm and $0,063 \times 0,050$ mm.

Distribution. Venda, South Africa.

Types. Holotype ♂, allotype ♀, Venda, Makonde, 10–11.ix.1980 (H. Cross) (SAIMR). 7 ♂ 4 ♀ paratypes, same data (SAIMR, USNM, NM, BMNH). Natal Museum Type No. 2595.

Discussion. The structure of the male genitalia and characters of the hind leg in both sexes place *Monohalea makonde* in a group consisting of *mimas* de Meillon, *meeseri* de Meillon, *africana* Clastrier, *sylvatica* Clastrier, and probably *litoraurea* Ingram & Macfie of which only the female is known. The following key will serve to separate the males of these species.

- 1 Body, femora and tibiae entirely black; dististyle narrowing apically to rounded apex; paramere sharply bent apically at right angles **makonde** sp. n.
- Body and/or legs paler, femora with pale band; dististyle either sharply pointed apically or of even width throughout; parameres otherwise 2
- 2 Dististyle of even width throughout, bluntly rounded apically; paramere straight, narrow, sharply pointed **meeseri** de Meillon
- Dististyle pointed apically; paramere either gently curved to a sharp point or forked 3

- 3 Dististyle sharply bent near base; posterior margin of ninth sternum produced and excavated at the margin **mimas** de Meillon
- Dististyle gradually drawn to a fine point and only gently curved; ninth sternum either smoothly rounded or with a slight indentation 4
- 4 Paramere deeply forked apically and more or less straight . **sylvatica** Clastrier
- Paramere not forked, gently curved and narrowing to a fine point **africana** Clastrier

Genus *Stilobezzia* Keiffer

Stilobezzia (*Stilobezzia*) *poikiloptera* (Ingram & Macfie)

Parabezzia poikiloptera Ingram & Macfie, 1922: 276 (Ghana; all stages; figs).

Stilobezzia (*Eukraiohelea*) *poikiloptera* (Ingram & Macfie); de Meillon, 1938: 266 (combination; notes on generic synonymy); Wirth, 1952b: 23 (generic status).

Stilobezzia (*Stilobezzia*) *poikiloptera* (Ingram & Macfie); Clastrier, 1958: 241 (♀ redescribed; Senegal; figs; subgeneric status); Clastrier & Wirth, 1961: 215 (Gambia, Liberia); Das Gupta & Wirth, 1965: 101 (group status discussed).

New Records. SOUTH AFRICA: *Natal*, 1 ♀ Saint Lucia, 21.x.1980, N. du Toit, UVL trap, (NM). ZIMBABWE: 18 ♂, 9 ♀ Kariba, 1675 ft, x.1967–ii.1968, Birkenmeyer, UVL trap (USNM).

Notes. Our material agrees very well with both the original description and also that of Clastrier (1958). Clastrier (1958) shows the presence of a small first radial cell and in our specimens this cell is even larger, whereas in the original illustration no first radial cell was shown. Apparently the size of the first radial cell, when present, is somewhat variable. The species appears to be uncommon and this is only the fourth time it has been recorded.

Stilobezzia (*Neostilobezzia*) *trilineata* sp. n. (Figs 54–58)

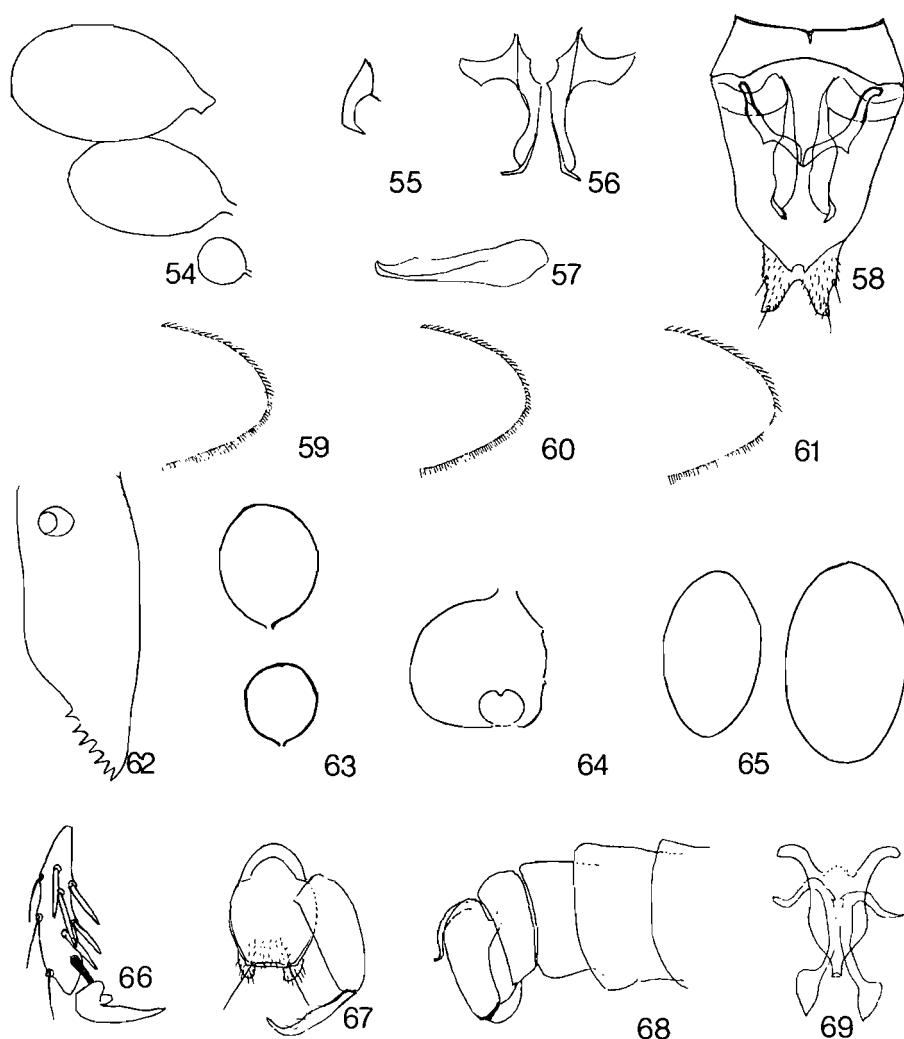
A medium-sized light brown species; mesonotum with three brown stripes, otherwise without any marked colour characteristics.

♂. Described from the holotype and 2 paratypes. Wing length 1,36–1,40 mm.

Head: Brown, mouthparts a shade paler. Eyes separated by about the width of 2 facets, bare. Antenna with torus dark brown, flagellar segments light brown; segment 3 elongated with 2 rows of verticils and a long stalk as usual; segments 4–12 barrel-shaped, the ratio of length to breadth increasing from less than 2 to 3 or a bit more in 12; relative lengths of segments 12–15 are 20–50–68–70; segment 15 with terminal bristle; antennal ratio (12–15/3–11) 1,09. Palpus 5-segmented; relative lengths of 2–5 are 15–28–15–27; segment 3 nearly parallel-sided without a marked sensory pit but with a patch of sensilla on the inner side just past the middle.

Thorax: Light brown but mesonotum with a broad central and 2 lateral darker longitudinal bands, paratergite and rest of border darker; scutellum light brown with extreme posterior margin darker, bearing a central pair of strong setae and a lateral seta on each side; postnotum brown to dark brown, but paler at junction with scutellum; pleuron light brown. Wing uniformly pale greyish-brown, veins somewhat darker and well marked; alula fringed; radial cells well formed, the second about 3 times as long as first; costal ratio 0,65. Legs light brown with tarsi a

shade paler; fore tibia with a comb of fairly long teeth and a hyaline apical spur longer than apical width of tibia; tarsomeres 1 and 2 on fore leg with a single row of palisade setae; hind tibia with a subapical comb as on fore tibia and an apical row of 9 light brown bristles, apical spur small, pectinate; hind basitarsus with 3 and tarsomere 2 with 2 rows of palisade setae; tarsomere 4 heart-shaped on all legs; claws equal, small, slightly curved, split apically and each talon bearing a minute spine near the base (Fig. 55).



Figs 54-58, *Stilobezzia trilineata*; 59, 62-64, *Jenkinshelea distincta*; 60, 65, *J. sudwalai*; 61, *J. polyxenae*; 66-69, *Johannsenomyia angulosa*: 54, 63, 65, female spermathecae; 55, male claw showing spine near base; 56, male parameres; 57, male dististyle; 58, male genitalia, basistyles and dististyles removed; 59-61, female wing, detail of costa prolonged past tip of radial cell; 62, female mandible; 64, female fourth tarsomere; 66, fifth tarsomere and claws of male hind leg; 67, male ninth segment, basistyle and dististyle; 68, tip of male abdomen, side view; 69, male aedeagus and parameres.

Abdomen: Brown dorsally, paler ventrally with apex darker. Genitalia (Figs 56–58) differing from its congeners principally in shape of parameres.

♀. Described from allotype and 1 other specimen. Wing length 1.4–1.6 mm. General coloration as in ♂.

Head: Eyes separated by width of 1 facet or slightly more; mandible with 8 teeth. Antenna with torus dark brown, rest light brown; segments 4–10 with ratio of length to breadth increasing from 2 to 3 and shaped from barrel to vasiform; relative lengths of segments 10–15 are 25–41–43–45–41–52; segment 15 with terminal bristle. Palpus structure and colour as in ♂; relative lengths of segments 2–5 are 12–30–18–22.

Thorax: Colour as in ♂; scutellum with strong setae placed as in ♂. Wing with structure and colour as in ♂ but with more macrotrichia, these extending back from apex to approximately end of costa; costal ratio slightly higher, 0.69; alula fringed and microtrichia very dense as in ♂. Legs with colour and structure as in ♂ but in allotype fore tibia with a prominent subapical, dorsal protuberance which is not evident in second female and may be due to angle of viewing; claws single, slightly curved, shorter than tarsomere 5, each with a strong basal barb.

Abdomen: Colour as in ♂. 3 spermathecae (Fig. 54), all apparently functional, 2 ovoid and smallest globular, measuring respectively (without the neck) 0.068×0.044 mm, 0.065×0.036 mm, and diameter 0.020 mm; in larger ones neck wide and quite long.

Distribution. South Africa.

Types. Holotype ♂ and 2 paratypes; allotype ♀ and one other ♀, Sudwala, Nelspruit District, Transvaal, 15.x.1980, De Meillon & Cross, UVL trap (SAIMR, USNM, NM). Natal Museum Type No. 2596.

Discussion. There is little to separate *S. trilineata* from its congeners except the structure of the male parameres. These structures are similar to those of *S. longicornis* Goetghebuer (1934) as redescribed by De Meillon (1959a), but easily distinguished as shown in the figure, also no serrations were evident on the external apex as found in *longicornis*.

Tribe HETEROMYIINI

Genus *Clinohelea* Kieffer

Clinohelea insperata De Meillon & Wirth, 1981c

New Record. SOUTH AFRICA: Natal, 1 ♀, St Lucia, 21.x.1980 (N. du Toit), UVL trap (USNM).

This is the second specimen of this species which was originally taken at Richards Bay south of St Lucia in 1979 by Tom Wessels of the Richards Bay Health Department.

Tribe SPHAEROMIINI

Genus *Jenkinshelea* Macfie

Jenkinshelea distincta sp. n. (Figs 59, 62–64)

A medium-sized species with head and thorax black, and abdomen paler except apically where it is black.

♀. Described from the holotype. Wing length 2,64 mm.

Head: Black; mouthparts dark brown. Mandible (Fig. 62) with 7 large teeth. Eyes widely separated, bare. Antenna with torus and flagellum dark brown, 3–10 paler at bases; 3 without a stalk; 4–10 about twice as long as wide; relative lengths of 10–15 are 10–23–22–22–25–32; 15 without an apical seta; antennal ratio (12–15/3–11) 0,7. Palpus 5-segmented; segment 3 not swollen and without sensory pit; relative lengths of segments 2–5 are 14–17–14–15.

Thorax: Mesonotum, scutellum and postnotum black, pleuron a shade paler. Wing typical of the genus with the anal lobe large and the costa extending to wing tip (Fig. 59); 2 radial cells present, costa not produced beyond tip of vein R_{4+5} ; macrotrichia absent, microtrichia dense. Halter infuscated. Legs with hind femur dark brown, apical fifth paler; mid and fore femora brown, hind tibia brown with apex appreciably darker and bearing a closely set patch of small but strong, sharply pointed setae, a slanted comb of closely set dark teeth which could not be counted, and an apical row of 5 long spines; apical spur undetected (if present it would be exceptionally small); fore tibia apically with a transverse comb of about 20 closely set teeth and an apical sharply pointed, hyaline spur about as long as apical width of tibia; tarsomeres 1 and 2 of all legs brown with apex of 2 slightly darker; tarsomeres 3, 4, and 5 darker; tarsomere 4 (Fig. 64) expanded and asymmetrical; 5 fusiform and armed with 6–8 batonnets; claws small, equal, each with an external short, thumb-like basal barb; the relative lengths of leg segments are:

Leg	F	T	T1	T2	T3	T4	T5	TR (T1/T2)
Fore	60	45	35	12	5	5	8	3,0
Mid	75	65	58	15	5	5	10	3,9
Hind	100	90	75	29	6	5	10	2,7

Abdomen: Light brown in alcohol but after treatment in potash white or creamy except segments 8 and 9 which remain black or very dark brown. 3 spermathecae (Fig. 63), 2 pyriform, pigmented, measuring $0,094 \times 0,073$ mm and $0,062 \times 0,052$ mm, plus a rudimentary third, very small, narrow, club-shaped and measuring 0,028 mm in length.

♂. Unknown

Distribution. South Africa.

Type. Holotype ♀, Soutini, Gazankulu, 13.xi.1980, H. & J. Cross, UVL trap (SAIMR).

Discussion. This species differs from *J. rhodesiensis* de Meillon (1937b) in having two radial cells, from *accraensis* (Ingram & Macfie, 1923) which has three pyriform spermathecae, from *corea* de Meillon (1942a) which is nearly twice as large, and from *polyxenae* de Meillon (1936) which has the costa extending beyond R_{4+5} (Fig. 61) and is also much larger; *corea* also has the costa slightly extended beyond R_{4+5} but the legs are much paler, the thorax pointed in front and slightly produced over the head, the mid-tarsal ratio less than 3 whereas it is 4 or more in the other related species.

Jenkinshalea sudwalai sp. n. (Figs 60, 65)

A medium-sized species with black head and thorax and reddish brown abdomen.

♀. Described from the holotype and one paratype. Wing length 3,2 mm.

Head: Black, mouthparts dark brown; mandible with 7 large teeth and shape as for *distincta* (Fig. 62). Eyes widely separated, bare. Antenna dark brown to black throughout, segment 3 with a short stalk, 4–10 each about twice as long as broad; relative lengths of 10–15 are 10–21–23–21–21–25; 15 without terminal bristle; antennal ratio 0,7. Palpus 5-segmented, segment 3 narrow, parallel-sided, without sensory pit and about as long as 4 and 5 combined, relative lengths of 2–5 are 15–25–11–13.

Thorax: Black throughout including halteres. Wing typical of genus, costa slightly produced beyond R_{4+5} (Fig. 60) and not quite reaching wing tip. Legs with femora and tibiae black without any pale markings; hind tarsi dark brown; apex of hind tibia with a transverse comb of c.20 short dark teeth, a row of 6 long spines, and a very small apical spur; fore tibia with a similar comb of teeth and a large apical spur which is about as long as tibia is wide; mid tibia with 4 strong black spines apically; hind basitarsus and second tarsomere each with a complete row of palisade setae; mid basitarsus with about 15 stout black spines along its anterior border and 2 more at extreme apex; tarsomere 4 cordate and not asymmetrical as in *distincta*; tarsomere 5 fusiform, bearing 4 black spines on fore and mid legs and 8 on hind leg; claws as in genus. The relative lengths of the leg segments are:

Leg	F	T	T1	T2	T3	T4	T5
Fore	55	45	25	10	5	5	10
Mid	75	58	40	15	5	5	10
Hind	100	90	60	23	8	5	11

Abdomen: Reddish brown on fresh specimens but colourless after treatment with KOH. 2 spermathecae (Fig. 65) ovoid or egg-shaped, deeply pigmented, measuring $0,17 \times 0,10$ mm and $0,13 \times 0,08$ mm, duct not pigmented.

Distribution. South Africa.

Types. Holotype ♀, paratype ♀, Sudwala, Nelspruit District, Transvaal, 17.x.1980, De Meillon, Cross & du Toit, UVL trap (SAIMR, USNM).

Discussion. With the prolongation of the costa beyond R_{4+5} (Fig. 60) and 2 radial cells this species resembles *polyxenae* de Meillon, 1936 in which, however, the extension of the costa is greater (Fig. 61); furthermore the spermathecae of *sudwalai* are ovoid and not pyriform, in which respect it differs from *distincta* sp. n. The low mid leg tarsal ratio of less than 3 is in strong contrast to 4 or more in *distincta* and *polyxenae*. The very dark legs are also distinctive.

The species is named for Sudwala, the legendary guardian of a nearby cave, once the scene of a frightful massacre.

Genus *Johannsenomyia* Malloch**Johannsenomyia angulosa** sp. n. (Figs 66–69)

A medium-sized dark species with plain wings, immediately recognisable by the genitalia which are so orientated as to lie at right angles to the main body axis.

♂. Described from the holotype and one paratype. Wing length 1,4 mm.

Head: Uniformly dark; eyes separated by width of 2–3 facets in front. Antenna with torus dark brown, flagellar segments and plume a shade paler; segment 3 with a long stalk, 4–10 barrel-shaped, slightly longer than wide; 11 about twice as long as wide, relative lengths of 10–15 are 8–9–11–20–18–18; terminal bristle subapical; antennal ratio (12–15/3–11) 1,3.

Thorax: Dark brown throughout including scutellum and postnotum; subspiracular sclerite with a few delicate hairs, mesonotum apparently without any heavy bristles, but with the small bent setae borne on minute tubercles characteristic of genus; scutellum with some short, rather strong setae. Wing unornamented, costa, radius, and base of media fairly strong, other veins weak; costal ratio 0,76; 2 well-formed radial cells, the second twice as long as first; wing membrane densely punctate, no definite microtrichia seen, macrotrichia absent; wing fringe setae all of similar length and extending partly on to alula. Legs with hind femur and tibia dark brown, those of other legs a shade paler; tarsi pale brown with fifth of hind leg especially darker; tarsomere 5 unarmed except on hind leg where it bears 4–5 heavy batonnets as in Fig. 66; hind basitarsus with a double row of palisade setae, tarsomere 2 of hind leg and mid basitarsus each with a single such row; fore tibia with a slanted comb of long pale teeth and a very long hyaline apical spur; hind tibia apically with a similar comb of pale teeth and an apical row of 7 strong bristles, apical spur small and brush-like; claws small, equal, short, but very strong, each talon with a small but strong basal lobe.

Abdomen: Uniformly dark brown, the only outstanding feature being genitalia positioned at a right angle (Fig. 68). Genitalia (Fig. 67) with sternum 9 very narrow, tergum 9 short; dististyle elongated, and slender with hooked tip; aedeagus (Fig. 69) of normal shape; parameres separate, each with apex expanded as shown in Fig. 69.

Distribution. South Africa.

Types. Holotype ♂, 1 ♂ paratype, Augrabies Falls, Gordonia District, Cape Province, 28.x.1980, De Meillon & Van Eeden (SAIMR, USNM).

Discussion. Five Subsaharan species of *Johannsenomyia* have been described: *albidorsata* (De Meillon, 1937a) from Zululand, *grahami* (Ingram & Macfie, 1923) from Nigeria, *nigeriae* (Ingram & Macfie, 1923) from Nigeria, *nigra* Goetghebuer (1933) from Zaïre, and *schoutedeni* (Goetghebuer, 1933) from Zaïre. *J. grahami*, *nigeriae*, and *schoutedeni* all differ from *angulosa* in having the femora armed. *J. nigra* is known only from the male, and Wirth, after examining the holotype in the Tervuren Museum in 1973, concluded from the external appearance of the male genitalia that the species fell in the genus *Johannsenomyia*, although Goetghebuer stated in his original description that the fifth tarsomere lacked ventral batonnets. *J. nigra* closely resembles *angulosa* in size and colour, with uniformly dark body, legs and halteres. According to Goetghebuer's figure, however, the antennal proportions are much different in *nigra*, those of the five distal segments being 9–11–20–18–18; thus segment 13 is longer than 14 or 15, whereas in *angulosa* it is slightly shorter. De Meillon & Wirth (1981c) figured the male geni-

talia of *J. albidorsata*, which differ from those of *angulosa* in the much shorter dististyle, rounded apices of the parameres, and much broader base of the aedeagus.

Genus *Macropeza* Meigen

Macropeza natalensis (De Meillon) 1937a

New Records. SOUTH AFRICA: *Cape Province*, 3 ♂, 4 ♀, Augrabies Falls, Gordonias District, 23–28.x.1980 (De Meillon & Van Eeden), UVL trap (SAIMR, USNM, BMNH, NM) 1 ♂, 1 ♀, Keimoes, 1.xi.1980 (De Meillon & Van Eeden), UVL trap (USNM).

Genus *Mallochohelea* Wirth

Mallochohelea aukurabis sp. n. (Figs 70–71)

A sombre black species with plain wings and yellowish tarsi except the fifth tarsomere which is brownish.

♀. Described from holotype. Wing length 2,8 mm.

Head: Black; face, clypeus and mouthparts dark brown to black. Eyes separated in front by about the width of 3 facets, bare. Mandible dark brown with 7 large triangular teeth. Antenna with segment 1 brown, a row of 6 short bristles on mesal side; torus brown, flagellar segments dark brown but paler basally; segment 3 about as long as 4 + 5 combined, with a very short stalk; segments 4–6 barrel-shaped, 7–10 gradually narrowing and elongating, 10 about 3 times as long as wide and vasiform; 11–15 vasiform with apex of 15 drawn out to a slender tip (Fig. 70); relative lengths of 10–15 are 15–29–28–29–31–34; antennal ratio (11–15/3–10) 1,4. Palpus dark brown to black; 5-segmented; segment 3 parallel-sided without a sensory pit; relative lengths of 3–5 are 23–10–10.

Thorax: Entire thorax including coxae black or very dark brown; mesonotum and subspiracular sclerite densely clothed with short, stiff, spine-like setae, no long strong bristles except above wing roots and on scutellum; mesonotum with a strong spine anteriorly. Wing slightly infuscated at extreme base and between radius and costa; veins well marked, especially radius and base of media; no macrotrichia, microtrichia dense and minute; radial cells open and clearly marked, second about three times as long as first; costal ratio 0,8. Legs with hind femur all black, slightly swollen distally; mid and fore femora black with proximal half or less slightly paler; fore, mid and hind femora armed respectively with 6, 5 and 4 short, strong, black spines; fore tibia apically with a slightly slanted comb and a small sharp but stout apical spur shorter than tibia is wide; hind tibia with a similar comb and an apical row of long, strong spines, apical spur very small and brush-like; hind basitarsus with a double row of palisade setae, tarsomere 2 with a single row and mid basitarsus with a single row; tarsomere 4 not cordate; tarsomere 5 (Fig. 71) elongated, about as long as 3 and 4 combined, darker than other tarsomeres, on all legs armed with 4 pairs of long black batonnets confined to basal half; claws long, sharply bent and equal, each claw with a prominent basal tooth.

Abdomen: Black above and paler ventrally; no gland rods. 3 spermathecae, black, ovoid, differing only slightly in size; measuring $0,125 \times 0,070$ mm, $0,094 \times 0,068$ mm, and $0,109 \times 0,078$ mm.

♂. Unknown.

Distribution. South Africa.

Type: Holotype ♀, Augrabies Falls, Gordonias District, Cape Province, 28.x.1980, De Meillon & Van Eeden, UVL trap (SAIMR).

Discussion. Although closely resembling *kirki* Macfie (1939) from Uganda and *fluminea* de Meillon & Wirth (1981b) from the eastern Transvaal, *M. aukurabis* is immediately separable in possessing three instead of two spermathecae; there are also minor differences which may prove to be variable; segment 15 of the new species, for instance, is about as long as 14, whereas in *fluminea* it is nearly twice as long.

Aukurabis is the original Korana name for the Augrabies Falls; it means big, rocky, or thundering waterfall.

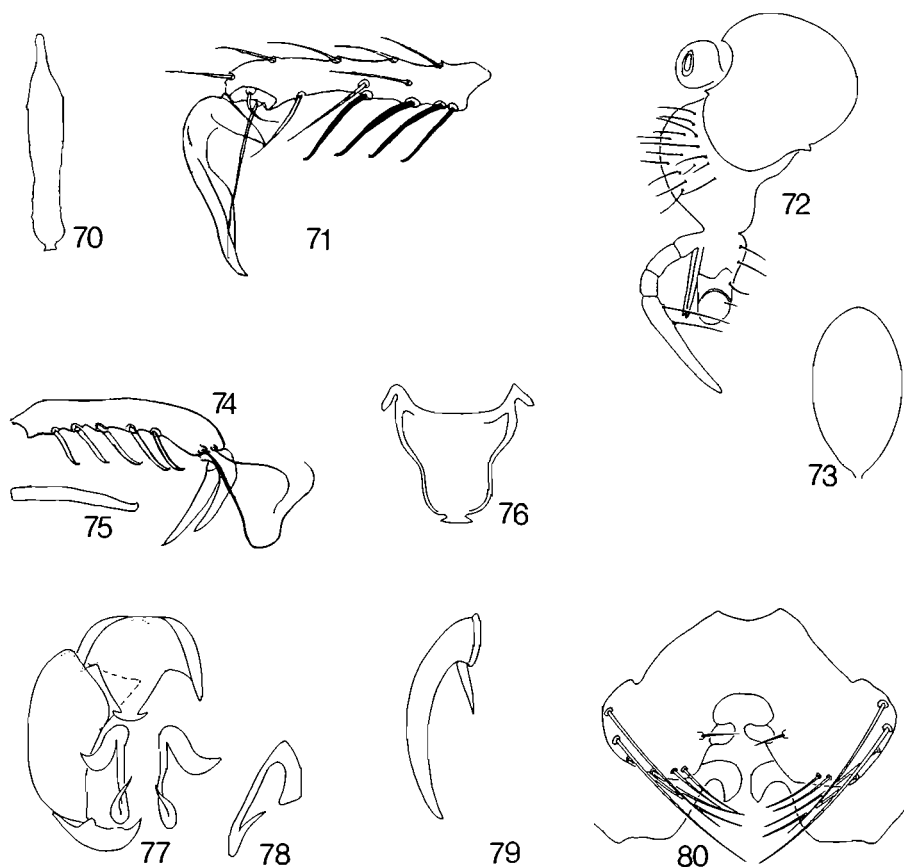
***Mallochohelea hansfordi* sp. n. (Figs 72–78)**

A striking and easily recognisable species because of its pendulous palpi somewhat as in the Chironomidae, a high antennal ratio of at least 2,0, distinctly marked legs, and presence of modified setae at the apices of the fifth tarsomeres.

♀. Described from holotype ♀ with ♂ genitalia attached; a similar paratype and 2 other paratypes without attached ♂ genitalia. Wing length 2,4 (2,3–2,5) mm.

Head: Black, mouthparts dark brown; eyes widely separated, bare; mandible with 7 large teeth. Antenna dark brown to brown, segment 3 without long stalk, 4–10 barrel-shaped, slightly less than twice as long as wide; relative lengths of 10–15 are 8–30–30–30–30–30; antennal ratio (11–15/3–10) 2,1. Palpus (Fig. 72) 5-segmented, unique in having the segment 5 greatly elongated and hanging down over end of proboscis, thus resembling the condition seen in some chironomids; segment 3 short and broad, without sensory pit; relative lengths of 2–5 are 13–26–25–(80–90); the whole densely pubescent.

Thorax: Black with pleura and scutellum slightly paler, latter with 4 strong bristles and a number of small hairs. Wing typical of genus, veins well marked, second radial cell slightly more than 3 times as long as first; costal ratio 0,81 (range 0,79–0,82); macrotrichia absent, microtrichia dense. Legs pale brown; hind femur with apical fourth dark brown to black, mid femur with apical half and fore femur with extreme apex black; mid and hind tibiae entirely black, fore tibia lightly infuscated at tip; tarsomeres 1–3 pale brown, 4–5 blackish; these colour differences are striking and obvious; femora of holotype armed with short, stout black spines as follows (mean number on all specimens in brackets): fore femur 5–5 (5,6), mid femur 3–3 (3,4), hind femur 5–7 (6,1); fore femur with a transverse comb of 20 or more teeth and a long, hyaline, sinuous apical spur; mid tibia with a single black spine at apex; hind tibia apically with a transverse comb as in fore leg followed by a row of 8 strong unequal bristles, apical spur a very small, hardly recognisable, pectinate spur; posteriorly tibia bears a single row of strong, semi-



Figs 70–71, *Mallochohelea aukurabis*; 72–78, *M. hansfordi*; 79–80, *Nilobezzia robusta*: 70, female antennal segment 15; 71, female fifth tarsomere and one claw of hind leg; 72, side view of female head; 73, spermatheca (1 of 2); 74, female fifth tarsomere and claws of hind leg (batonnets shown on external side only); 75, detail of batonnet; 76, male aedeagus; 77, male genitalia; 78, paramere in side view; 79, single talon of claws on female mid leg; 80, female genital sclerotisation.

erect, equally spaced bristles; basitarsus and second tarsomere of hind leg each with a single row of palisade setae, mid basitarsus similar but setae more widely spaced; tarsomere 5 (Figs 74, 75) each with 9–10 black batonnets on all legs; apex of tarsomere 5 of hind leg with a pair of long prominent filamentous sensilla (Fig. 74); on mid leg they are less developed and on fore leg hardly noticeable; one claw appears to be slightly shorter than other on all legs (ratio 7 or 8 to 10); each claw with a blunt, external, basal tooth.

Abdomen: Mostly black, with membranous venter white after immersion in mounting medium. 2 spermathecae (Fig. 73), dark, ovoid, subequal, without pigmented duct; measuring $0,130 \times 0,070$ mm and $0,110 \times 0,070$ mm.

♂. Attached to ♀ holotype and 1 paratype were the genitalia of 2 cannibalised males. Genitalia (Figs 76–78) small but densely sclerotised and very difficult to

position for accurate viewing and illustration. Sternum 9 (Fig. 77) concave, tergum evenly rounded apically and slightly longer than basistyles. Basistyle broad basally, tapering distally and not quite twice as long as wide; dististyle short, strong, hooked, ending in a stout but sharp, black point. Aedeagus (Fig. 76); sclerotised, its real shape apparent only after manipulation under the microscope. Parameres (Figs 77–78) separate, each with a long, broad, basal apodeme, main body relatively short and slender, with distal fourth abruptly bent ventromesad and ending in a sharp point.

It is worth recording that in the paratype the parameres appeared as simple straight rods without the modified tip. On examining the female to which these genitalia had been attached, the two missing parts were seen imbedded in the base of the eighth sternum and had obviously broken when the genitalia were dissected on the slide.

Distribution. South Africa.

Types. Holotype ♀ with ♂ genitalia on the same slide, 3 ♀ paratypes (one with ♂ genitalia); Sudwala, Nelspruit District, Transvaal, 15.x.1980, De Meillon, Cross, & Du Toit, UVL trap (SAIMR, USNM, NM, BMNH). Natal Museum Type No. 2597.

Discussion. This species is named for Dr Frank Hansford, Director of the National Institute of Tropical Diseases in Tzaneen, Transvaal.

Genus *Nilobezzia* Kieffer

Nilobezzia robusta (de Meillon) (Figs 79–80)

Bezzia (*Probezzia*) *robusta* de Meillon, 1937: 346 (♂; Zululand; figs).—de Meillon, 1942c: 67 (in key).

Nilobezzia robusta (de Meillon); Wirth, de Meillon & Haeselbarth, 1980: 171 (combination; syn. *capensis*).

Nilobezzia capensis de Meillon & Hardy, 1954: 70 (♂ & ♀; Cape Prov.; figs).

Distribution. South Africa.

New Record. SOUTH AFRICA: *Cape Province*, 1 ♀, Augrabies Falls, Gordonia Dist., 27.x.1980 (De Meillon & Van Eeden), UVL trap (USNM).

Note. The female claws are slender and curved, equal, each with a short slender external tooth as shown in Fig. 79. The female genital sclerotisation is shown in Fig. 80.

Tribe PALPOMYIINI

Genus *Bezzia* Kieffer

Bezzia flavoscutellaris Haeselbarth, 1975

Hitherto known only in the male sex. We here describe the female from spirit and slide material.

♀. In general resembling ♂ in leg and thoracic markings, but abdomen dorsally with distinctive but variable pattern. Wing length 1,5 mm.

Head: Brown, clypeus and mouthparts brown. Mandible with 12 large teeth and a number of smaller ones. Eyes separated by width of 3–4 facets, bare. Antenna

with torus brown; segments 4–10 barrel-shaped, broadly paler basally; 11–15 darker with extreme bases paler; relative lengths of 10–15 are 12–20–21–20–22–25; 15 without terminal bristle, evenly rounded apically; antennal ratio (11–15/3–10) 1,0. Palpus light brown, about as long as proboscis, segment 3 without sensory pit, 3–5 subequal in length.

Thorax: Mostly dark brown; anterior half with a pair of darker admedian stripes, prescutellar area dark brown extending forward to meet anterior admedian dark stripes; border broadly dark brown; scutellum entirely yellowish with 4 strong but colourless setae; postnotum brown, a shade paler mesally; mesonotum with a few strong setae above wing roots, otherwise with fine hairs except for 2 small patches of short dark spines mesally (as in ♂); pleuron same colour as mesonotum, subspiracular sclerite with fine hairs as on mesonotum. Wing usual for genus; wing veins poorly marked and difficult to see; costal ratio 0,67. Legs with definite black markings as follows: fore femur yellowish with a subapical dark band covering two strong, short, black bristles with which it is armed, extreme apex black; fore tibia dark brown with a sub-basal and a subapical band; mid and hind femora yellowish with distal fourth to third black; mid and hind tibiae yellowish with extreme base and variable amount of apex dark; tarsomeres yellowish, narrowly darkened apically; fore femur armed with a pair of short, very strong black spines, in one specimen a much smaller third spine was present; fore tibia with a short, crescentic comb of teeth and a short apical spur, in hind tibia comb is slanted and longer with an apical row of 6 long bristles, apical spur not seen; mid tibia apically with a rather strong, long spine. Hind basitarsus with double row of palisade setae, tarsomeres 2 and 3 with a single row; mid tarsomeres 1 and 2 each with a single row; tarsomeres 4 not cordate; 5 long and slightly darkened; claws small, simple, and not strongly curved.

Abdomen: Yellowish to whitish ventrally and laterally; dorsally with a variable amount of brown pigment divided into discrete patches separated by broad intersegmental pale bands and a narrow longitudinal pale stripe which reaches apex; in one specimen abdomen was completely white dorsally; this distinctive pattern, when present, was not seen in ♂ where abdomen is nearly uniformly unicolorous dorsally; apex of abdomen constricted between segments 6 and 7 as shown for *platyura* Macfie (1947) (de Meillon & Wirth, 1981c). One pair of gland rods present. Two spermathecae, subequal, pear-shaped with long necks typical of the genus; measuring $0,187 \times 0,120$ mm.

Distribution. Originally described from Rhodesia (Zimbabwe).

New Record. SOUTH AFRICA: *Cape Province*, 4 ♂ 2 ♀ (slides), 28 ♂ 11 ♀ (alcohol) Augrabies Falls, Gordonian Dist., 26–28.x.1980, De Meillon & Van Eeden, UVL trap, (SAIMR, USNM, BMNH, NM).

Discussion. The female is a typical *Bezzia*. We have no hesitation in assigning it to *flavoscutellaris* Haeselbarth (1975), in spite of the fact that the author did not draw attention to the clearly marked legs in the male which we find to be similar to those of the female. The two black patches of short, sharp spines in the middle of the mesonotum are probably specific though not mentioned by Haeselbarth.

Bezzia insolita sp. n. (Figs 81–89, 93, 95–96)

A coal-black species with slightly paler tarsi and some unusual features; the greatly elongated, spine-like aedeagus is visible in unprepared specimens.

♂. Described from the holotype and 1 paratype. Wing lengths 1,5 mm.

Head: Black with a stronger and longer black bristle on front between eyes which are widely separated and bare. Antenna missing in both specimens. Palpus 5-segmented, black; segment 3 parallel-sided, without a sensory pit, but with a few sensilla on mesal surface near the middle; relative lengths of segments 3–5 are 25–13–15; segment 5 pear-shaped.

Thorax: Entirely coal-black; mesonotum without any long, strong bristles except above the wing where there are 3 or 4; scutellum with 4 such bristles; above coxa of fore leg there are 2 stout black spines (Fig. 86) and a few strong setae situated on a sclerite corresponding to proepisternum of Culicidae (Harbach & Knight 1980). Wing unadorned, without macrotrichia; media barely sessile; costal ratio 0,6. Legs with femora and tibiae coal-black, all tarsi pale brown with tarsomeres 4 and 5 slightly infuscated; fore femur slightly enlarged, bearing on apical half (Fig. 82) 3–4 long and very strong black spines and 2–3 shorter ones; fore tibia with a slightly curved comb of about 20 long teeth of which 2 or 3 at posterior end of comb appear much stouter than usual, anterior spur a strong, sharply pointed spine slightly longer than apical width of tibia; hind tibia with subapical comb composed of rather short but stout teeth and an apical row of 5 long yellowish spines, apical spur not clearly defined but apparently quite short and split; hind basitarsus with a complete double row of palisade setae; tarsomeres 2 and 3 of hind leg each with a single such row; tarsomere 4 somewhat cordiform with apical sensory hair gently curved; tarsomere 5 unarmed, long and narrow; claws (Figs 87–88) on all legs short, slightly curved and strong, each talon bearing a strong median tooth on inner side.

Abdomen: Coal-black as thorax; in slide preparations venter paler. Genitalia (Fig. 84) very striking in several respects: aedeagus (Fig. 84) and fused parameres (Fig. 93) greatly elongated and protruding well beyond basistyles, this feature obvious in fresh or untreated specimens; basistyle with large spinose mesal, basal lobe (Fig. 85); dististyle quadrangular and quite short; apical half of tergum 9 greatly reduced and reaching no more than midlength of basistyle (Fig. 84); aedeagus in side view (Fig. 95); parameres (Fig. 96).

♀. Described from 2 specimens caught with males. General appearance as in male, coal black with paler tarsi. Wing length 1,3 and 1,4 mm respectively. Features which differ from ♂ are noted specially.

Head: Frons with a similar heavy black bristle as in ♂; mandible (Fig. 81) with 8 large teeth. Relative lengths of flagellomeres 10–15 as 14–23–25–26–26–24; segment 15 without apical bristle; antennal ratio $(11-15/3-10)$ 1,2.

Thorax: Scutellar bristles even stronger than in ♂; proepisternum with 2–3 stout black spines; claws as in ♂.

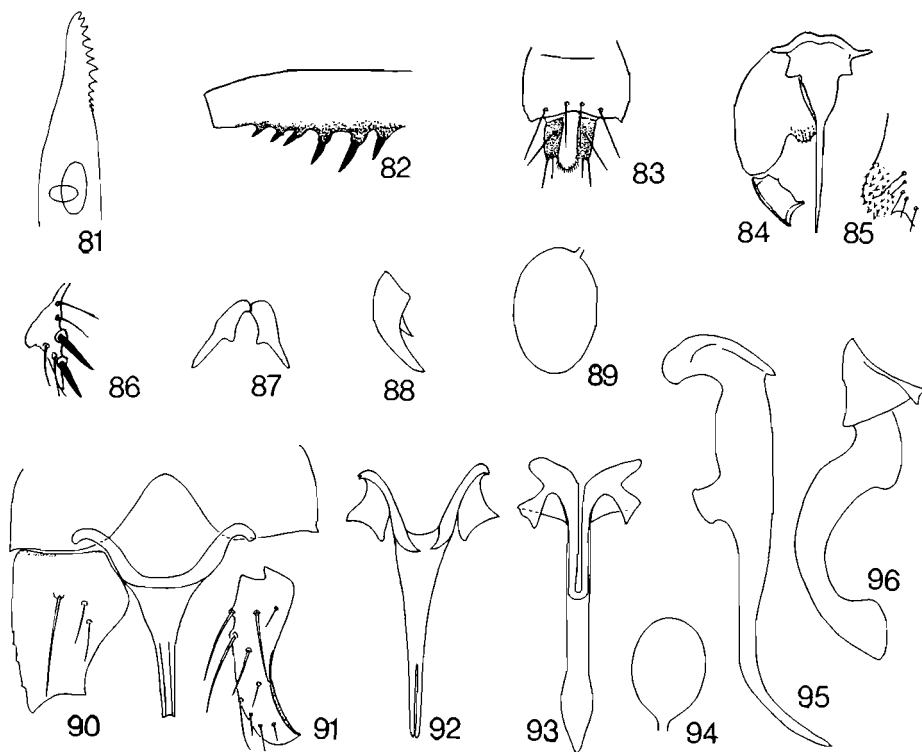
Abdomen: Apex constricted between segments 6 and 7 as described for *B. platyura* Macfie (De Meillon & Wirth, 1981c); one pair of gland rods arising from an-

terior margin of tergum 7; with unusual genitalia of ♂ one might expect a strong modification in ♀ but this not observed. 2 spermathecae (Fig. 89), ovoid, pigmented, the larger measuring $0,091 \times 0,062$ mm, the second slightly smaller, each with short, parallel-sided, pigmented collar; subterminal position of collar shown in figure probably due to mounting and we expect it to be terminal as usual.

Distribution. South Africa.

Types. Holotype ♂, 1 ♂, 2 ♀ paratypes, Makonde, Venda, 10–11.ix.1980, H. Cross, UVL trap (SAIMR, USNM).

Discussion. The strong, stout, black spines arising from protruding sockets on the fore femur, the toothed female claws, the general blackish colour, and the structure of the male genitalia, especially the presence of a spiculate lobe on the mesal side of the basistyle, place *Bezzia insolita* in the *nicator* group of Haeselbarth (1965b). It comes closest to *B. nigerrima* Haeselbarth in its unbanded, blackish legs and in details of the male aedeagus, but *nigerrima* differs in its stouter aedeagus and parameres, and dististyle with the apex not so deeply bifid. The other species of the *nicator* group do not have the stout proepisternal spines.



Figs 81–89, 93, 95–96, *Bezzia insolita*; 90–92, *B. turrata*; 94, *Phaenobezzia beni*: 81, female mandible; 82, male fore femur; 83, male ninth tergum; 84, male genitalia, ventral view; 85, detail of mesal lobe of basistyle; 86, female proepisternum; 87, claws of female mid leg; 88, one claw of female hind leg, lateral view; 89, 94, 100, female spermatheca; 90, male ninth sternum, basistyle and aedeagus; 91, male dististyle; 92, 93, male parameres, ventral view; 95, aedeagus, lateral view; 96, parameres, lateral view.

Bezzia lucida de Meillon, 1939a

New Record. SOUTH AFRICA, *Cape Province*: 3 ♂, Augrabies Falls, Gordonia Dist., 26–28.x.1980 (De Meillon & Van Eeden), UVL trap (NM, USNM).

Note. This is the first record of this species since its original description. Originally from Matadi, Zaïre, where it was reared from moss by Dr M. Wanson; this southern record from very arid country is unexpected.

***Bezzia turrata* sp. n. (Figs 90–92)**

A dark species with prominently banded legs and plain wings.

♂. Described from holotype and 2 paratypes. Wing length 1,20 mm.

Head: Black, clypeus and mouthparts paler, top of head and clypeus with rather strong setae. Antenna with torus black, flagellum brown; segments 4–11 barrel-shaped, ratio of length to width increasing from about 1:1 on segment 4 to nearly 4:1 on 11, each of these slightly paler basally; relative lengths of 11–15 are 15–26–13–14–15; antennal ratio (12–15/3–11) 0,7–0,8. Palpus pale, only slightly shorter than proboscis; segment 3 parallel-sided, without sensory pit; relative lengths of 3–5 are 20–15–15.

Thorax: Black or very dark brown, in one specimen, prescutellar area a little paler; some strong black setae immediately above wing bases, otherwise mesonotum covered with fine short hairs; scutellum slightly paler; with about 8 strong black bristles and some short hairs; pale colour of scutellum extends along anterior margin of postnotum which otherwise is very dark brown to black; pleuron coloured as mesonotum with some very fine hairs on subspiracular sclerite. Wing colourless and without macrotrichia; media barely sessile, veins including radius and costa very poorly defined and clearly visible only on dry-mounted specimens or in alcohol; costal ratio 0,65. Legs distinctly banded and with many rather short stiff setae; coxae very dark brown to black; femora and tibiae similar with pale bands as follows: hind femur dark brown laterally, slightly paler mesally, with a subapical, well-defined pale band and apex black; mid and fore femora similar but markings not so well defined; hind tibia like femur but with a sub-basal pale band in addition and the subapical band broader; mid and fore tibia similar but banding less well defined; basitarsus and second tarsomere black-tipped on all legs, tarsi otherwise all pale yellow to whitish. Fore femur armed with 1–2 short, stout, black spines on apical half and a transverse row of 2–4 very similar ones at tip; other femora unarmed although some apical black spines or bristles do occur. Apex of fore tibia with a transverse comb of about 10 short teeth situated along edge of a black patch, apical spur long and strong, several short, strong, black bristles just before transverse comb; hind tibia with a subapical comb of about 20 short teeth and an apical row of 7 long, strong, black spines, apical spur not distinct; mid tibia with a pair of black spines at apex; hind basitarsus with double row of palisade setae and black spine at tip; hind tarsomere 2 similar but palisade setae more widely spaced and less well developed; tarsomere 4 short but not cordate; claws only slightly curved.

Abdomen: Very dark brown to black dorsally, paler ventrally. Genitalia (Figs 90–92) small and stubby; sternum 9 with deep depression along distal border; tergum 9 quite short and mainly transparent. Basistyle short and only slightly longer than basal breadth; dististyle (Fig. 91) of even width throughout, strong and supplied with a number of stout bristles. Aedeagus (Fig. 90) and fused parameres (Fig. 92) very similar in outline, each like a tower, hence specific name; it could not be determined if apices were split or not.

♀. Described from the allotype and 1 ♀ paratype. Same as ♂ in general appearance. Wing length 1,32 mm.

Head: Colour as in ♂, mandible with 9 strong teeth. Antenna with segments 3–10 subglobular, each a little longer than wide, relative lengths of 10–15 are 15–20–20–20–20–20; antennal ratio (11–15/3–10) 0,86. Palpus much as in ♂ but relative lengths of segments 3–5 are 15–12–15.

Thorax: Colour and setation as in ♂. Wing as in ♂ but costal ratio 0,71; media if sessile is barely so; an apparent strengthening of anterior margin beyond end of costa clearly seen in dry-mounted specimens. Legs with colour and banding as in ♂; fore femur in 1 ♀ unarmed and in other with only one short, dark, stout spine just beyond middle and none at apex; otherwise as in ♂; claws small, equal, each talon with a small internal barb at mid length.

Abdomen: Colour as in ♂; a single pair of gland rods present. 2 spermathecae, ovoid, very dark in colour; larger measures $0,065 \times 0,047$ mm, second slightly smaller and collapsed in both specimens; both have a short pigmented collar.

Distribution. South Africa.

Types. Holotype ♂, allotype ♀, 2 ♂ 1 ♀ paratypes; Soutini, Gazankulu, 13.xi.1980, H. & J. Cross, UVL trap (SAIMR, USNM, NM). Natal Museum Type No. 2598.

Discussion. The male is readily separated from all other Subsaharan species by the aedeagus and parameres appearing as a pair of towers, each much like the Eiffel Tower, lying one on the other. The female, which undoubtedly belongs here, is similar to and difficult to separate from others in the genus.

Genus *Phaenobezzia* Haeselbarth

Phaenobezzia beni sp. n. (Fig. 94)

A plain brown species of average size; two radial cells present.

♀. Described from holotype. Wing length 2,6 mm.

Head: Uniformly brown except for the palpi which are considerably paler. Mandible with 8–9 teeth; eyes widely separated, bare. Antenna with segments 4–10 gradually increasing in length from about 2 to 3 times as long as wide, and also becoming more vasiform, 10 being distinctly so; segments 4–15 slightly paler basally; segment 3 with a long stalk and 15 with a terminal seta; relative lengths of 10–15 are 21–38–38–35–38–45; antennal ratio (11–15/3–10) 1,2. Palpus 5-segmented, pale brown; segment 3 parallel-sided, without a discernible sensory pit; relative lengths of segments 2–5 are 15–30–15–15.

Thorax: Uniformly brown; scutellum a shade paler with 10 strong bristles and several smaller hairs; subspiracular plate of pleuron a shade darker and densely clothed with fine short hairs as on mesonotum. Mesonotum without anterior tubercle. Wing with costal ratio 0,84; 2 radial cells present as in *P. cinnae* (de Meillon 1936). Legs uniformly brown with tarsomere 5 a little darker, unarmed; fore tibia apically with a transverse comb of teeth and a short, hyaline, apical spur which is shorter than apical width of tibia; hind tibia with a somewhat slanted comb of teeth and an apical row of 6 bristles, an apical spur could not be seen; hind basitarsus and tarsomere 2 each with double row of palisade setae, tarsomere 3 with a single such row; palisade setae not differentiated on fore and mid tarsi; tarsomeres 4 on all legs short but not definitely cordate; segments 5 fusiform and armed with stout colourless sharp-tipped ventral spines, externally and internally respectively, on fore, mid, and hind legs as follows: 4-4, 4 to 5-3, and 6-3. Claws small, equal, only slightly curved, each talon with a small sub-basal spur on inside.

Abdomen: Brown throughout dorsally and paler ventrally; with 5 pairs of heavily sclerotised gland rods. One spermatheca (Fig. 94), black, oval, measuring $0,078 \times 0,060$ mm, a short length of duct sclerotised.

Distribution. South Africa.

Type. Holotype ♀, Sudwala, Nelspruit District, 15.x.1980, de Meillon, Cross & du Toit, UVL trap (SAIMR).

Discussion. The species is named for Ben Dames, Chief Guide at the Sudwala caves, whose enthusiasm, interest and practical help greatly facilitated collecting at the site.

Hitherto, *P. cinnae* (de Meillon) was the only member of the genus with two radial cells in the wing (Haeselbarth, 1965). The new species is immediately separable in having a single spermatheca and five pairs of heavily sclerotised gland rods.

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